

MEDAIR LEBANON - ZAHLE

HEALTH & NUTRITION KNOWLEDGE, PRACTICE AND COVERAGE SURVEY 2016

Based on household interviews of Syrian refugee and vulnerable Lebanese women
caring for children under five years of age
Bekaa Valley, Lebanon



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This survey was conducted for Medair program evaluation and quality-improvement purposes and was not considered human subjects research requiring Institutional Review Board (IRB) approval.

REPORT CONTRIBUTORS

2016 KPC Survey Project Management

Laurène Barlet

Survey Design

Questionnaire Design: Christy Gavitt, Naomi Downs, Emily Chambers Sharpe, Ines Morgan, Dr. Wael Harb, Laurène Barlet

Sample Size and Sampling Frame: Laurène Barlet

GIS support for Sampling Frame: Reine Hanna, Ali Nemer

ODK Survey Coding and Design: Naomi Downs

Survey Fieldwork

ODK Field Deployment and Management: Dr. Wael Harb and Medair Health team

Data Preparation, Analysis and Report Writing

Translation: Farah Darwiche

Data Cleaning: Catherine Schenck-Yglesias, Laurène Barlet

Data Analysis: Catherine Schenck-Yglesias

Writing: Catherine Schenck-Yglesias

Reviewers: Emily Chambers Sharpe, Dr. Lois Fergusson, Heidi Giesbrecht, Laurène Barlet, Dr. Wael Harb

Medair Field Supervisors: Abir Mekdad, Christine Melhem, Farah Darwiche, Hanine Harfoush, Hiba Araj and Sabine Kassouf

Medair Data Collectors/Enumerators:

| | |
|------------------|------------------|
| Aida Btaich | Maram Elmaiss |
| Alaa Almais | Mariam Kanaan |
| Alaa Smidi | Marwa Jomaa |
| Amanda Nehme | Marwa Yassine |
| Amira Houjeiri | Mirna Elhadj |
| Aya Nasrallah | Mona Harati |
| Ayat Saleh | Nabila Jaloul |
| Dana Hawa | Noha Elmaiss |
| Esraa Houshaimi | Nour Alnabouch |
| Faten Nabha | Nour Hashem |
| Fatmeh Asaad | Nourhan Zahran |
| Hana Bilal | Raja Abouhaikal |
| Hiba Abbas | Ramla Kazoun |
| Hiba Elmais | Rasha Rasoul |
| Iness Aalame | Rawand Elhassan |
| Jihan Abourashed | Riham Almais |
| Kamilia Assaf | Sarah Maadarani |
| Katia Kassab | Souad Shimali |
| Layla Dirani | Stephanie Samaha |
| Lilian Khatib | Wadiha Ghorra |
| Malak Kadri | Walaa Jarrah |

Correspondence should be addressed to:

Laurène Barlet, Assessments, Monitoring and Evaluation Manager

E-mail: monitoring-leb@medair.org

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SUMMARY TABLE OF FINDINGS

| Topic | Indicator | 2016 Result | Statistically Significant Differences by Strata | Statistically Significant Differences by District |
|--------------------------------------|--|-------------|---|---|
| Demographics | Percent of women who were first married before the age of 18 | 32.7% | Yes | No |
| Demographics | Mean household size | 6.0 | Yes | No |
| Child Health | Early initiation of breastfeeding | 76.3% | No | No |
| Child Health | Exclusive breastfeeding rate 0 – 5 months | 27.6% | No | Yes |
| Child Health | Use of Oral Rehydration Therapy for children with diarrhea | 22.4% | Yes | No |
| Child Health | Treatment with zinc pill or fluid for children with diarrhea | 7.5% | No | No |
| Child Health | Percent of suspected pneumonia cases treated at a health facility | 54.4% | Yes | No |
| Child Health | Percent of suspected pneumonia cases treated with antibiotics | 20.9% | Yes | No |
| Child Health | Fully immunized children | 41.2% | Yes | Yes |
| Child Health | Polio 3 immunization (final dose, card) | 69.6% | No | Yes |
| Child Health | Penta 3 immunization (inclusive of DPT3, Hep B and Hib final doses, card) | 63.9% | Yes | No |
| Child Health | Measles + MMR immunization coverage, card and recall | 71.0% | No | No |
| Child Health | Percent of children < age 5 with a disability | 2.6% | * | * |
| Reproductive Health | Contraceptive prevalence rate, CPR | 50.4% | Yes | Yes |
| Reproductive Health | Modern contraceptive prevalence rate, mCPR | 31.8% | No | No |
| Reproductive Health | Percent of women who received 4 or more ANC visits | 68.8% | Yes | Yes |
| Reproductive Health | Percent of women that had skilled attendance at delivery | 97.8% | Yes | No |
| Reproductive Health | Percent of women that gave birth at a health facility | 93.7% | Yes | No |
| Reproductive Health | Percent of deliveries that were C-sections | 47.4% | Yes | Yes |
| Refugee Pregnancy | Percent of Syrian Refugees that gave birth to their youngest child in Syria | 30.6% | No | No |
| Family Health | Percent of respondents that know 2 or more non-communicable disease risk factors | 48.5% | Yes | Yes |
| Family Health | Percent of respondents that have a family member over age 5 with a disability | 3.5% | * | * |
| Medair and Other NGO Services | Percent of respondents who received a health voucher in the past 6 months | 4.5% | Yes | No |

* indicates that significance testing was not done due to small cell sizes

EXECUTIVE SUMMARY

This statistical report is based on a household survey conducted by Medair Lebanon between December 10th and 16th, 2016. This is the second annual KPC Survey, the first of which was conducted in mid-December 2015. Different households were sampled from the same geographic area each year. In 2016, Medair enumerators completed interviews of 754 Syrian refugee and vulnerable Lebanese women of reproductive age caring for children under five years of age residing within four target districts within the Bekaa governorate of Lebanon. The three strata compared in this report are Syrian refugees living in informal settlements (IS), Syrian refugees living outside IS, and vulnerable Lebanese, all of whom live outside IS.

Sponsor

This evaluation was implemented by Medair Lebanon in partnership with World Relief Canada and funded by grants from Global Affairs Canada and Swiss Solidarity.

Humanitarian Partnerships and the Syrian Refugee Crisis

In 2015 and 2016, Medair Lebanon worked in partnership with the Lebanon Crisis Response Plan (LCRP) Health Sector lead, the Lebanon Ministry of Public Health (MoPH) and Coordinating Agencies, WHO and UNHCR. Medair was one of 33 NGOs (15 working in the Bekaa Valley) in the 2015-16 LCRP Health Sector Plan and is one of 43 NGOs in the 2017-2020 plan. On a local level, Medair requested the collaboration of municipalities as they were approached to request demographic data, to brief them on the KPC Survey, and to assure that there was approval from authorities for the survey to be conducted in the sampled cadasters.

Context

The knowledge that people have, the behaviors they choose and the access to quality health care given the socio-economic and political context in which they live all have an impact on their health outcomes. Research has shown that only 20% of health outcomes are due to clinical care, including access to the health care available on the market in the geographic area in which people live or work, and has highlighted the salience of social and economic factors (40%), and health behaviors, which account for 30% of the variance in health outcomes (Hood, et al, 2016). Looking further, one can differentiate actual from perceived access, as fear of stigma when in need of particular types of services (such as treatment for sexually transmitted infections; or fear of discrimination from not having a birth certificate, identification card, or residency status for oneself or one's children) may change a person's health-seeking behavior, aside from the ability and willingness to pay for care, all important considerations.

With nearly 1.5 million displaced Syrians having migrated to Lebanon in the past five years – over a million of whom have registered as refugees with the United Nations High Commission for Refugees (UNHCR) – the Government of Lebanon (GoL) created the first Lebanon Crisis Response Plan (LCRP) for the years 2015-16.

While progress has been made, Syrian refugees residing in Lebanon continue to face complex constraints. They balance registering for UNHCR refugee status, availing themselves of humanitarian assistance, while perhaps seeking low-paid employment in the informal economy. Refugees receive legal residency and work authorization status with the Lebanese government under the pledge of a Lebanese citizen who serves as a *kafeel* (sponsor). Syrians have historically been a major part of the Lebanese workforce, but the label of 'refugee' has placed a new stigma upon this group. In communities located across Lebanon, there are underlying poverty and unemployment issues among Lebanese citizens. Some of these Lebanese nationals claim that their significant socio-economic challenges are exacerbated by the increased population pressure of neighboring Syrian refugees, whether the latter reside in tented informal settlements or residential areas interspersed among the host community. Lebanese host populations with socio-economic difficulties are now commonly labeled 'vulnerable or deprived Lebanese' in official reports (Calestini, 2014).

Objective

The Medair 2016 KPC Survey is the primary Outcome Evaluation data source for the Medair Health Program, and was designed to provide a snapshot in time of the knowledge, practices and coverage of health care services in the catchment area of the program. The objective of the 2016 KPC Survey is to measure key health indicators within the Medair catchment area for program evaluation and performance-improvement purposes. By identifying current gaps in knowledge, practice and coverage, this evaluation will highlight areas for further intervention, not only by Medair, but by other partners working in the Bekaa governorate's health sector.

According to the World Health Organization, "ensuring access to quality health services is one of the main functions of the health system." Medair Lebanon is a partner in health-systems strengthening, both at the health facility level and in community-based service provision. Program goals are to:

- improve access to health care services in the Medair catchment area through the provision of transportation and medication vouchers, and providing low-cost clinical services,
- improve the quality of service delivery at primary health care facilities, specifically ten MoSA social development center clinics (SDCs) in the Medair catchment area, and
- provide extension services in the informal settlements, where Syrian refugees reside, to promote healthy behaviors, provide information on specifically reproductive and child health services available at nearby health facilities, and increase health care-seeking behavior in health facilities when individuals are unwell.

The goals of the Medair program extend beyond assuring that facilities provide good care once someone arrives. They include key health behaviors such as prevention of illness in the home and seeking care at a health facility when danger signs appear in any member of the family.

Design

To identify representative households in the catchment area to visit, Medair employed multi-stage cluster sampling with probability proportional to size (PPS) for each of the three strata. For Syrian refugees, a 30 cluster by 12 household design (8 non-IS households and 4 IS) and for vulnerable Lebanese, a 30 cluster by 12 household design was used to meet sample size requirements, for a total sample size of 720 households. The consent of one woman of reproductive age caring for at least one child < 5, both of whom live in the sampled household, was the requirement for the household to be eligible to be represented in the survey and for the interview to begin.

A rigorous counterfactual or experimental study design was not possible within the given funding and staffing levels, along with the ethical review necessary for that design and the desired timeline for completion of the survey. That is, the KPC survey was not designed like an epidemiological study, to compare differences in outcomes among respondents based on their exposure status to Medair Health Program interventions.¹

The present study is a descriptive observational study with some elements of exploratory ecological and cross-sectional analytical designs. All outcomes of interest were compared across strata – three demographic subpopulations of interest to Medair – and district, at a single point in time. Point estimates and any significant differences between groups are described in this report.

All outcomes of interest were asked about the same day in different questionnaire items but some pertained to a two-week period prior to the survey, some to the previous six months, and some to the previous year. Some of the reproductive health questions were related to the birth of the respondent's youngest child, which were all within the last five years, given that all respondents had at least one child under age five. And immunization questions related to all immunizations received by the respondent's youngest child, who was at least 12 months of age at the time of the survey.

Participants

The source population for the 2016 KPC Survey is all Syrian refugee and vulnerable Lebanese households with at least one woman of reproductive age (WRA) caring for children under 5 years of age living within the catchment area of the Medair Health Program. The catchment area is defined as a list of cadasters:

- (a) within a 5-km radius of a Medair-supported health facility (all of these are Ministry of Social Affairs Social Development Center (SDC) clinics) or
- (b) in which community health volunteers or community midwives work with Syrian refugees in informal settlements.

The sampled population – the result of Medair enumerators visiting households according to the sampling frame and participants consenting to being interviewed and completing the survey – is comprised of 752 women, about 50% of whom were Syrian refugees, and 50%, vulnerable Lebanese. One-third of the Syrians interviewed lived in informal settlements.

Setting

The Medair Health Program catchment area is completely within the districts of Baalbek, Rachaya, West Bekaa, and Zahle in the Bekaa and Baalbek/El Hermel governorates of Lebanon. All interviews were conducted in respondents' living quarters and recorded into Arabic-language data-entry screens. Coded choices were then seamlessly transferred from Arabic into English when the information was retrieved from the server on which the data was uploaded.

Data Analysis

Data extraction and transformation steps included entering coded data into the Arabic-language ODK interface. This was then made available in an English-language survey data file in Microsoft Excel. Arabic free-text answers were translated into English and added to the same Excel file. The Microsoft Excel data file was shared with a health informatics consultant for further data transformation, cleaning, and analysis.

Given the demographic data limitations detailed in the companion technical report (Medair Lebanon, 2017b), Medair M&E staff requested that the health informatics consultant not apply weights during data analysis for its KPC Survey statistical reports and presentations.

IBM SPSS Statistics software, version 24, was used for statistical data analysis, including the calculation of exploratory and descriptive statistics, comparison of means using ANOVA and Tukey's HSD post-hoc test, comparison of column proportions using z-tests and the

¹ There would be temporal issues with any analysis of 2016 KPC Survey data comparing outcomes in exposed and non-exposed groups in an attempt to attribute changes to the respondents' exposure to a Medair Health Program component, as the data do not reveal whether the respondent's visit to a Medair-supported SDC or interaction with a Medair CHW was antecedent to a consequent health behavior or access to care indicator in the respondent's household.

Benjamini-Hochberg correction, and Independent Samples Median Comparison, a non-parametric test. Significant differences, confidence intervals, and data visualization are presented in this report for applicable variables. Some graphs presented in the report were created using Microsoft Excel 2016.

Main Outcome Measures

The Summary Table above shows key outcome indicators measured by the 2016 KPC Survey in specific domains: Demographics, Child Health, Reproductive Health, Refugee Pregnancy, Family Health, as well as receipt of Medair and other NGO Services. Data on all knowledge-practice-coverage indicators measured in the survey are presented in this report. All indicators align in intent with Demographic and Health Survey (DHS), Multiple Indicator Cluster Survey (MICS), WHO Core Health Indicators, and those used for monitoring global health program progress, but may not all be based on the same question wording or equation. Annex B compares nine KPC Survey indicator equations to those aligned with WHO 100 Core Health Indicators (2 behavioral risk factor and 7 coverage indicators).

Limitations

Only women - no men - of reproductive age were surveyed, and no attempt was made to determine the child-care responsibilities of each adult member of sampled households. Respondents (all women of reproductive age) were asked about their husbands rather than partners and this presumed a heterosexual population.

Sources of bias always important to consider in household surveys are selection bias (mitigated through sampling frame design), information bias, and measurement error.

Results

Risks

While doing well with early initiation of breastfeeding, the surveyed population is far from reaching the WHO Target of 50% of infants exclusively breastfed for six months after delivery.

Use of Oral Rehydration Solution (ORS) for diarrhea treatment in children < 5 is low, and the administration of zinc as treatment is even lower. It is not clear if this is due to a commodity or knowledge gap, or for another unknown reason.

Having a higher proportion of suspected pneumonia (ARI) cases seen by a health care provider is important given the potential severity of the illness if left untreated. Only one-fifth of all suspected pneumonia cases were given antibiotics. This topic needs to be assessed further epidemiologically to know if it is an appropriate proportion, e.g., whether the root cause lies in not seeking care for their child when needed, low-severity child ARI cases not needing antibiotics, health care providers not adequately diagnosing pneumonia and/or not prescribing antibiotics, mothers' low adherence to the treatment plan given by the health care provider, or any combination of these reasons.

The data in this report have pinpointed both access and utilization issues with child immunizations. Only about 40% of children represented in this survey were fully immunized.

Contraceptive prevalence is about half, and less than a third of respondents use modern methods. Both of these coverage rates need to be higher.

Length of stay at the health facility following both vaginal and C-section birth seems too short for a significant proportion of respondents, considering the WHO recommendation of a minimum 24-hour stay after every delivery (WHO, 2013).

(http://www.who.int/maternal_child_adolescent/publications/WHO-MCA-PNC-2014-Briefer_A4.pdf, accessed 23 May 2017).

Postnatal care coverage is lower than that for both antenatal and delivery care, which may mean there is a need for an awareness campaign of postpartum risks and the reason and content of PNC visits, as well as ensuring these occur in a timely manner.

Medair Lebanon Community Midwives currently refer women to health facilities in order to give birth attended by a skilled provider. Medair may wish to take on an advocacy role in assuring that health facilities and personnel are not overburdened by the higher-than-recommended C-section rate (40% compared to the WHO 5 – 15% range based on medical need) that is currently observed among the surveyed population.

Only half of respondents knew 2 or more behaviors that would lower one's risk of being diagnosed with an NCD, and the majority did not mention smoking cessation or physical activity/exercise as risk reduction strategies, despite these being very widely publicized factors (World Economic Forum, 2017).

Low percentages of respondents reported receiving Medair and other NGO services. Because respondents may not have recognized that services they received throughout the year were from Medair Lebanon, this could mean that the organization was unable to reliably assess the proportion of the population visited by CHWs and receiving its commodities on a population scale through the questions asked. Routine tracking of CHW activities and commodities distributed throughout the year is important for calculating

output indicators, but in these annual surveys, evaluators would like to calculate accurate program coverage indicators; this depends on the population served throughout the year recognizing Medair Lebanon as the provider of its services through effective branding and communications strategies.

Protective Factors

Syrians, IS were the most likely group to list Community Health Workers as a source of recent health messages, which aligns with the Medair Health Program's deployment of CHWs to informal settlements.

Antenatal care, delivery, and postnatal care are all largely carried out in health facilities with skilled personnel in attendance. The current small variations by strata and district do not detract from the overall high coverage but should continue to be monitored closely for health equity reasons.

According to UNICEF (2010), "Cesarean deliveries are an essential part of comprehensive emergency obstetric care, [and a] C-section rate below 5 per cent indicates that many women who need the procedure are not undergoing it, which endangers their lives and those of their babies." That the current rate of C-section deliveries was about 40% among KPC Survey respondents indicates the wide availability of Comprehensive Emergency Obstetric Care (CEmONC).

Respondents did report receiving some commodities directly from Medair and others in general without knowing which NGO they were from. Results showed low to moderate coverage/population reach of NGO activities under the Lebanon Crisis Response Plan, which is useful information on a regional planning level.

Recommendations

As a Lebanon Crisis Response Plan partner organization, Medair should promote best practices in population health monitoring and evaluation as well as stay abreast of issues affecting the legal registration status and potential permanent stay of Syrian refugees in Lebanon, as these will affect the health service access and needs of this population.

Medair Lebanon should continue its use of routine M&E and annual household survey data to pinpoint both emerging needs and long-standing health equity gaps to address via its health program.

Medair Lebanon should perform additional root-cause analysis to look at gaps between current and targeted performance within all health domains in this survey in order to better pinpoint needed interventions. A WHO framework for carrying this out to identify the local reasons underlying lower-than-desired childhood immunization access and utilization is referenced.

Best practices in refugee health from other settings should be incorporated into the service delivery platform in Lebanon, to assure quality of care; these include an appreciation by clinicians of the social determinants of health and sensitivity to how housing conditions and family integrity issues among their Syrian refugee patients may affect health status and outcomes.

Evidence-based practices in all domains should be reviewed in light of gaps observed to assure that services in the community and at SDCs incorporate the current public health knowledge base. For example, counseling during antenatal care has been shown to increase the uptake of contraception following delivery, and given lower-than-ideal CPR and mCPR in these survey results, ANC content should be reviewed to ensure that postpartum family planning messages are incorporated. Additional guidelines are referenced for diarrhea, suspected pneumonia, and vaccination.

Within its community program, Medair Lebanon Community Midwives and Community Health Volunteers can be trained to raise the awareness of women they see on the risks and benefits of Cesarean delivery and the importance of a minimum length of stay following both vaginal and Cesarean delivery for clinical monitoring.

Hospital data should be examined to see if KPC Survey results reflect an ongoing trend in a shorter length of stay after delivery in Lebanon, as current guidelines require longer stays that these results show are not being met for many respondents.

There are specific roles for both CHWs and clinical staff at Medair-supported SDCs in primary, secondary, and tertiary prevention of NCDs.

Medair should consider the addition of both new modules and new and revised questions in existing modules of the questionnaire in future annual KPC Surveys. This includes line-listed health data on individual children (currently, only age, sex, and disability status are requested) and items asked of other adult household members, including the respondent's husband or partner. Particular attention is called for regarding the following topics: women's agency/household decision-making (the theoretical link between knowledge and practice in the K-P-C continuum), the case definition and related questions to define suspected pneumonia in children < 5, the standard series of questions for establishing met and unmet need for family planning methods, a revamping of the postnatal care section, given confusing results with the current questions with overlapping time frames not standardized yet with the current PNC indicator: receipt of postnatal care within two days of delivery. Some health programs are asking additional questions

on content of both ANC and PNC visits, as well, and not just the number of visits or contacts. A revised NCD questionnaire section should take into account the Prevalence-Awareness-Treatment-Control continuum.

Medair Lebanon should work with Lebanon Crisis Response Plan Health Sector leads, coordinating agencies, and NGO partners on streamlining and standardizing branding and supply chain of commodities distributed and of services provided (e.g., if CHWs from multiple NGOs working across catchment areas) to assure that both commodities and services reach the intended beneficiaries while allowing providers the ability to assess that reach and coverage whether individually or collectively as part of the LCRP.

Keywords: Health promotion, nutrition, maternal and child health, child survival, household survey, Syrian refugees, vulnerable Lebanese, health indicators, population health, outcome evaluation, post-conflict health

Medicine is a social science and politics is nothing else but medicine on a large scale. Medicine as a social science, as the science of human beings, has the obligation to point out problems and to attempt their theoretical solution; the politician, the practical anthropologist, must find the means for their actual solution.

Virchow, quoted in the *Journal of Epidemiology and Community Health*, 2006

Humanitarian action is grounded in four principles: humanity, neutrality, impartiality, and independence. These must be upheld at all times to ensure access to persons in need.

Kelley, N., 2017, *Journal on Migration and Human Security*

Health care is labor-intensive everywhere. A poor country with low wages may have less money to spend on health, but it also needs to spend less to provide these labor-intensive services.

Amartya Sen, quoted by WHO, 2017

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CONTEXT

The Medair 2016 KPC Survey is the primary Outcome Evaluation data source for the Medair Health Program, which has provided health systems strengthening assistance at health facility and community levels within the Bekaa Governorate of Lebanon since early 2014. This household survey was designed to provide a snapshot in time of the knowledge, practices and coverage of health care prevalent in the catchment area of the program from a population health perspective.

Syrian Migration to Lebanon

Compared historically to other receiving countries, Lebanon has recently seen the migration of the greatest proportion of refugees globally (vis-à-vis its current population) cross into and remain within its borders (European Commission, 2016). From 2011 through the present, over 1.5 million Syrian refugees relocated to Lebanon (GoL and United Nations, 2017) such that as of 2016, one in four residents of Lebanon were Syrian – “the refugees from Syria have not been placed in formal camps, but are dispersed across Lebanon in houses among the Lebanese population, while 17% are residing in informal tented settlements” (Ammar, *et al.*, 2016, pp. 1-2). Many Syrian refugees in Lebanon live in the Bekaa Valley region that borders Syria (Dionigi, 2016), which is comprised of the Bekaa and Baalbek/El Hermel governorates.

While legal residency and employment permits have been issued for Syrian migrants to Lebanon through well-established, routine procedures from the beginning of this recent migration stream, many Syrians had complained the fees were prohibitive.

The Lebanese authorities remained reluctant to relax the residency permit system, which remained too costly for most refugees to afford. This left refugees open to arrest and detention, and vulnerable to abuse and extortion from unscrupulous landlords. Similarly, while Lebanon has always relied on Syrian workers, progressive restrictions on the issuing of work permits left many refugees unable to secure work, while others who could find informal employment were exposed to serious exploitation by employers. (Kelley, 2017, p. 87)

In this context, many Syrians preferred to register with UNHCR as refugees as this entitled them to humanitarian assistance in what was initially a parallel system but this aid has now – through the Lebanon Crisis Response Plan (LCRP) – become more integrated with services provided for the Lebanese population.

Lebanon is not a signatory to the 1951 Refugee Convention, hence the limited legal protection for refugees and asylum seekers in Lebanon, although it is bound by the customary law principle of non-refoulement and by the obligations of the human rights treaties which it has signed and which are incorporated into its Constitution. International standards under these obligations recommend, at a minimum, the adoption of temporary protection measures to ensure the safe admission of refugees, to protect them against refoulement and to respect their basic human rights.

Although UNHCR has been permitted by the Lebanese government to register refugees, the protection offered by such registration remains limited; being registered with UNHCR in Lebanon can provide some legal protection and is important for access to services but it does not grant refugees the right to seek asylum, have legal stay or refugee status. This leaves refugees in a challenging situation. (Aranki and Kalis, 2014, p. 17)

The central government in Lebanon has announced some fee reduction and elimination recently to facilitate the legal registration of Syrians for employment and residency permits. However, the following further details the potential statistical and health impact of the legal context in which Syrian refugees have been living in Lebanon:

The authorities also would not agree to facilitate the registration of refugee births, which were estimated to exceed 40,000 in 2015. Lebanese law mandates the registration of all births in Lebanon. However, refugees had great difficulty obtaining birth certificates for their newborns due to complicated administrative processes, burdensome fees, and arbitrary actions by local authorities. In the absence of a birth certificate attesting to the place of birth and nationality of the parents, refugee children in Lebanon have no official legally recognized identity and therefore are at risk of being stateless. The consequences can be severe and include the inability to attend school, to receive medical care, to travel, to work legally, to marry, or to pass on one's nationality to one's children (Kelley, 2017, p. 87).

The Bekaa governorate, one of the two governorates in which Medair Lebanon works, hosts 25% of the Syrian refugees in the country.

From Global to Local Health

A decade ago, all six regional offices of the World Health Organization, including that of the Eastern Mediterranean Region, in which Lebanon is located:

unanimously called for a return to the principles and approaches of primary health care as the best way to organize health services. And the [newly established] International Health Partnership encouraged wide support for a single national health strategy, a single monitoring and evaluation framework, and a strong emphasis on mutual partner accountability. It further encouraged the channeling of [health and development]

assistance through existing systems and structures as a way to build capacity... The 2008 World Health Report published empirical data on the striking inequalities in access to care, health outcomes, and what people had to pay for care. That same year, the Commission on the Social Determinants of Health reported evidence that the true upstream drivers of ill health come from factors in the social environment, like low incomes, little education, limited employment options, and poor living and working conditions. (WHO, 2017)

Lebanon had created its National Strategy for Primary Health Care in the 1990s (Ammar, 2014), which initiated a national health facility network, starting with only 29 out of more than 800 facilities across the country where targeted investments would be made and oversight would be greater. The MoPH has enforced “strict standards for eligibility for health facilities to become part of the MoPH Network” (GoL MOPH, 2015, p. 13); by 2016, the national network had grown to include 220 PHCCs. On a related note, the MoPH has had an evolving hospital accreditation system in place since 2002, and 37% of all 128 hospitals were accredited in the first year of the program.

The national network of PHCCs is administrated through a system of contracts between the MoPH, NGOs that provide technical assistance, and municipalities. The mean catchment area of each health center is currently a population of 20,000, ranging from around 10,000 in rural areas to about 30,000 people in densely populated urban areas.

The MOPH provides considerable support to this effort, with the development of guidelines and health education materials, training activities, developing incentives, purchasing and distribution of vaccines, drugs, medical supplied and equipment. The centers are committed to provide a comprehensive package of services including immunization, essential drugs, cardiology, pediatrics, reproductive health and oral health, and to play an important role in school health, health education, nutrition, environmental health and water control. Provision of essential drugs, vaccines and other services are reported to the MOPH for analysis, evaluation and feedback. Also, centers do not differentiate between insured and uninsured patients regarding nominal fees, with the MOPH policy being to ensure a safety net while providing an alternative to the uninsured to have access to affordable essential services through its network. Such a horizontal approach provided by primary health care complements and cross-cuts with vertical programs in place. (Ammar, 2014, p. 4)

Toward the harmonization of services on a local level, in 2014, the MoPH signed the Inter-Ministerial Initiative for Integrated Health and Social Plans (IHSP) that called for municipalities to take leadership in coordinating care provided by MoPH PHCCs, Ministry of Social Affairs Social Development Centers (SDCs) and public schools within their boundaries.

In an effort toward integration of service delivery across population groups at all geographic levels, in early 2015, the GoL created the national Health Steering Committee (HSC): “the HSC’s responsibility is to set the strategic directions for the health sector, prioritize health interventions and steer the allocation of resources within the health sector. The committee reports to the Minister of Public Health and the National LCRP Steering Committee, and one of its cost-effectiveness principles is to build on the existing health system and avoid duplications and parallel systems to the extent possible.” (GoL MOPH, 2015, p. 22). A recent assessment of the Lebanese health system by co-authors based at the London School of Hygiene and Tropical Medicine, the American University of Beirut and University College London Institute of Education shows that health care delivery and payment is indeed still fragmented (Table 1), so these recent efforts are definitely addressing an empirical need.

Table 1 - The fragmented structure of the Lebanese health system by population group in 2016 (Source: Blanchet, et al, 2016, p. 33)

| Functions of health system | Population groups | | | | | |
|----------------------------|--------------------------------------|--------------------|---------------------|------------------------|---|--|
| | Non-poor | | Vulnerable | | | |
| | Socially insured | Privately insured | Vulnerable Lebanese | Palestinian in Lebanon | Palestinian refugees from Syria | Syrian refugees |
| Stewardship | MoH | Private sector | MoH | UNRWA | UNRWA | UNHCR |
| Financing | National Social Security Fund (NSSF) | Insurance premiums | Taxes | International | International | International |
| Delivery | Public sector | Private sector | Public services | Humanitarian sector | Public services, NGO and private sector | Public services NGO and private sector |

Humanitarian Partnerships and the Refugee Crisis

The first Lebanon Crisis Response Plan was created by the Lebanese government for the years 2015-16, with another now in place for 2017-2020. The LCRP Health Sector lead is the Ministry of Public Health, and Coordinating Agencies are the World Health Organization and UNHCR. In the 2015-16 Plan, the MoPH partnered with 33 nongovernmental organizations (NGOs) nationally, 15 of which were assigned to work in the Bekaa Valley. Medair was one of those fifteen NGO partners in the 2015-16 LCRP and remains a MoPH partner in the 2017-2020 LCRP.

The coordination by the above partnership eventually led to a stronger health systems approach:

Ad-hoc assistance in meeting primary and secondary health care needs eventually gave way to investing more in primary health care centers, and a new and innovative means to engage a private sector health administrator to apply guidelines, monitor costs and efficiencies, and approve costlier secondary care. (Kelley, 2017, p. 86)

Health Care Availability for Syrian Refugees and Vulnerable Lebanese

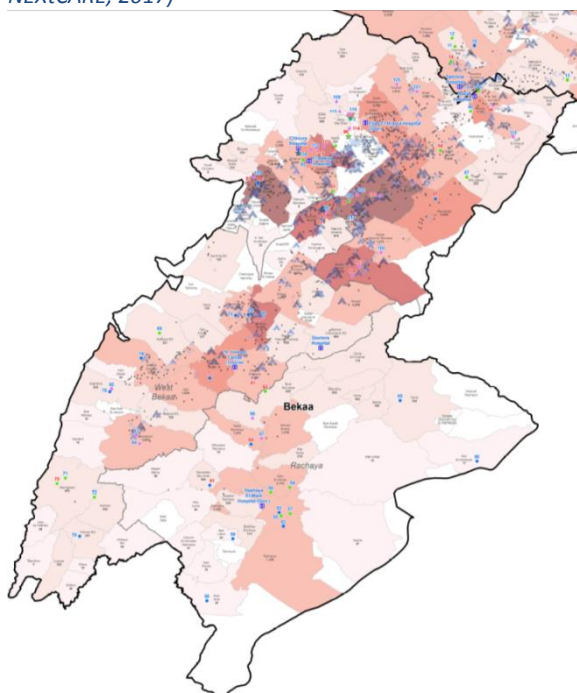
Figure 1 shows the distribution of Primary Healthcare Centers (PHCCs) and hospitals throughout the Bekaa governorate. Lebanese nationals can receive services at any of the facilities categorized in Table 1, either at a nominal fee (government facilities) or market prices (private sector). The aforementioned LCRP Health Sector NGO partners support about 100 of the PHCCs, SDCs, and health outlets/dispensaries listed in Table 2 below. In addition to strengthening the service delivery – benefiting all clients, they provide targeted subsidies at these sites for Syrian refugees seeking services, and some extend these subsidies to “a limited number of vulnerable Lebanese as a way of addressing critical needs and mitigating potential sources of tension.” (2017-2020 LCRP, p. 90). Lebanese should present a valid identification critical document, and Syrians must present a valid identification document or their UNHCR Registration Certificate to receive health care benefits (UNHCR, 2014).

Table 2 - Number of Health Care Facilities, by Type, in Lebanon (Source: 2017-2020 Lebanon Crisis Response Plan, p. 90)

| Level of Care | Provider | Type | Number of Sites |
|-----------------------|-----------------------------|---|---------------------------------------|
| Primary | MoPH (with NGOs) | Primary Healthcare Centers (PHCCs) | 220 |
| Primary | MoSA (with NGOs) | Social Development Center (SDC) clinics | 220 |
| Primary | Government, Private and NGO | Health Outlets/Dispensaries | 700 |
| Primary | Private | Informal practices/health rooms run by Syrian doctors in informal settlements | |
| Primary | NGO | Mobile Medical Units (MMUs) | |
| Primary and Secondary | Private | Clinics | |
| Tertiary | Government and Private | Hospitals | 53 in the network contracted by UNHCR |
| Medications | Private | Pharmacies | 2,928 |

As shown in Figure 1, UNHCR employs geographic information systems (GIS) to show the spatial distribution of health facilities where Syrian refugees can seek care in each governorate, district and municipality. They use this information as decision support for identifying gaps in service availability, which is shared with the MoPH, other UN agencies and NGOs at Health Working Group meetings. Health assessments ask respondents the travel time from their residence to health facilities, which can of course be cross-referenced with these maps. While many respondents report either walking or driving themselves to health facilities for routine care, the Lebanese Red Cross does provide ambulance services to hospitals in emergencies.

Figure 1 - Spatial Distribution of Primary Health Care Centers and Hospitals, Bekaa Governorate, Lebanon (Source: UNHCR and NEXtCARE, 2017)



GlobeMed, Medivisa (headquartered in Saudi Arabia) and NEXtCARE (based in Dubai) have each been contracted during different time periods by UNHCR as the private sector third-party administrator or TPA for secondary and tertiary care needed by Syrian refugees in Lebanon (Marsi, 2017). Their role has been to administer the referral care when primary care physicians cannot provide needed services. The TPA provides telephone hotline support and administers the approvals of any care beyond that available routinely at PHCs and SDCs, making payments directly to providers. Table 3 lists the services available throughout Lebanon at a primary care level (PHCCs and SDCs) for both Lebanese and Syrians. The prices listed are those that the UNHCR offers to registered Syrian refugees. The prices to Lebanese may be similar, but sponsored by the MOPH directly rather than the UNHCR.

Table 3 - Health Care Services and Prices to Syrians in the Bekaa Governorate, through LCRP Partners (Source: UNHCR (2016) Health Services for Syrian Refugees in Bekaa)

| Service | Price |
|---|---|
| Vaccines | Free at all PHC centers and dispensaries |
| Consultation | 3,000 – 5,000 LBP |
| Acute medications | Free |
| Tuberculosis screening and treatment | Free at Center for Tuberculosis |
| Leishmaniasis treatment | Free at participating hospitals |
| Treatment for HIV+ persons | Free at National Center |
| Chronic medications (diabetes, cardiac conditions, hypertension, asthma, epilepsy, etc.) | 1,000 LBP per visit (handling fee) |
| Family planning (IUD, pills, condoms) | Free |
| 2 ultrasounds for pregnant women | Free |
| Dental care | Subsidized. Refer to PHC or dispensary for exact costs. |
| Mental health services and medication | Free |
| Laboratory and diagnostic tests | 15% of the cost for <ul style="list-style-type: none"> Children under 5 years of age Persons over 60 Persons with disabilities Pregnant women 10% of the cost for those refugees with specific needs who cannot afford it. Other refugees will pay 100% of the cost of laboratory and diagnostic tests. |
| Hospital inpatient care | 25% of the cost for <ul style="list-style-type: none"> Life-saving emergencies Giving birth Care for newborn babies And up to 25% of the cost for very expensive hospital treatment (e.g., disc disease, open heart surgery) or elective medical interventions, with prior approval from the UNHCR Exceptional Care Committee, administered by the currently contracted TPA. |

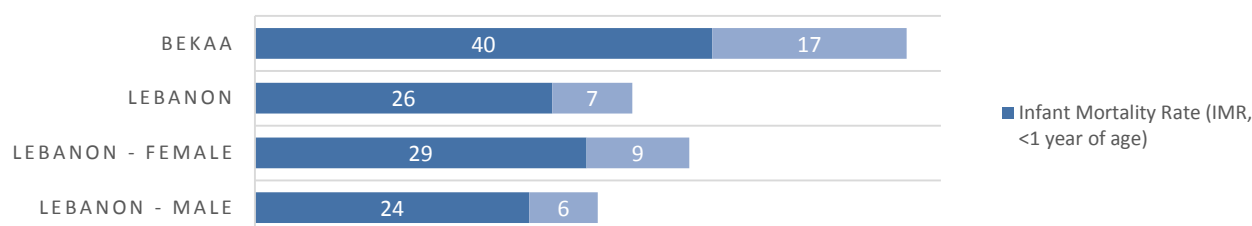
Medair Lebanon Health Program

Headquartered in Switzerland, Medair is a nongovernmental organization with the humanitarian aim of reducing human suffering in some of the world's most remote and devastated places. Medair brings relief and recovery to people in crisis, regardless of race, creed or nationality. Medair Lebanon has offices in Mar Takla (Beirut) and Zahle (Bekaa governorate) – Lebanon's third largest city. Zahle serves as the administrative capital of the Bekaa governorate, which borders Syria.

Medair is a Lebanon Crisis Response Plan (LCRP) health sector partner organization and thus is part of a coordinated effort to address local health promotion and health care needs in its target population and geographic catchment area.

The Bekaa governorate had the highest child mortality rate of all regions in the country, based on estimates from the latest MICS Survey (UNICEF, 2001) conducted on a national level in Lebanon (Figure 2).

Figure 2 - Infant and Child (<5) Mortality Rates, Lebanon and Bekaa Governorate, 2000 (Source: 2000 MICS2 Survey)



As a population health program, Medair targets Syrian refugees and vulnerable Lebanese host communities in four districts of the Bekaa governorate in Lebanon. From early 2014 through the present, the Medair Health Program has implemented both health systems strengthening and direct service delivery interventions in this geographic area. Figure 3 shows the relationship between the inputs and activities and their intended effects, in Logic Model format.

Figure 3 - Medair Health Program Logic Model

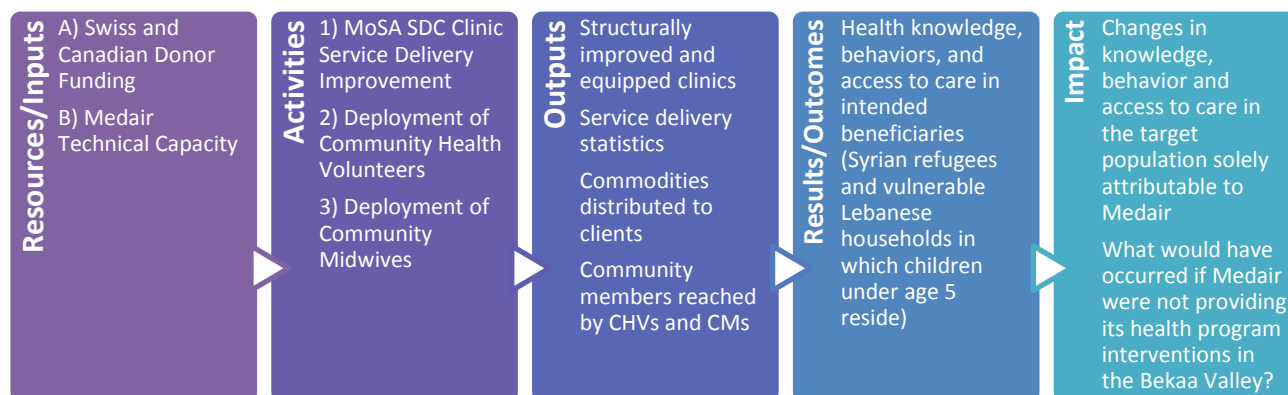


Table 4 - Medair-Supported SDC Clinics, by District

| | District | SDC Clinic |
|----|------------|-----------------|
| 1 | Baalbek | Brital |
| 2 | Baalbek | Chaat |
| 3 | Baalbek | Nabi Chit |
| 4 | Baalbek | Talia |
| 5 | Rachaya | Rafid |
| 6 | West Bekaa | Al Marj/El Marj |
| 7 | West Bekaa | Joub Jannine |
| 8 | Zahle | Haouch El Omara |
| 9 | Zahle | Kabelias |
| 10 | Zahle | Kfarzabad |

The Medair systems strengthening component is the provision of technical and financial support to the ten MoSA SDCs, listed in Table 4. These primary care clinics are located throughout the catchment area and function much like Ministry of Public Health (MoPH) PHCCs, except that they are located within SDCs, where many people come for social benefit registration. In addition to providing salary supplements to staff, Medair has structurally improved clinics, procured and installed needed equipment, instituted a new paper-based health information system, and trained clinic staff. Medair has also provided commodities including basic hygiene kits, postnatal care kits, and baby kits. The latter are distributed at the time of immunization visits according to Lebanon's national vaccination schedule. Medair has also provided subsidies to improve access to care, including vouchers for transportation, services, and medications.

Medair Lebanon's community-based service delivery is comprised of the deployment of 27 Community Health Volunteers and two Community Midwives to informal settlements where Syrian refugees reside, providing health education and promotion via interactive face-to-face communication. Medair has trained these CHWs to provide needed information on child health, reproductive health/family planning, and non-communicable diseases (NCDs), with an emphasis on referring clients to health facilities for antenatal care, delivery care, postnatal care, immunizations, and for diagnostic services and medications for episodes of acute illness as well as chronic disease management. The Community Midwives provide ANC, PNC, FP and newborn visits directly to beneficiaries living within informal settlements providing clinical care as well as sharing messages around reproductive health, breastfeeding and infant feeding practices.

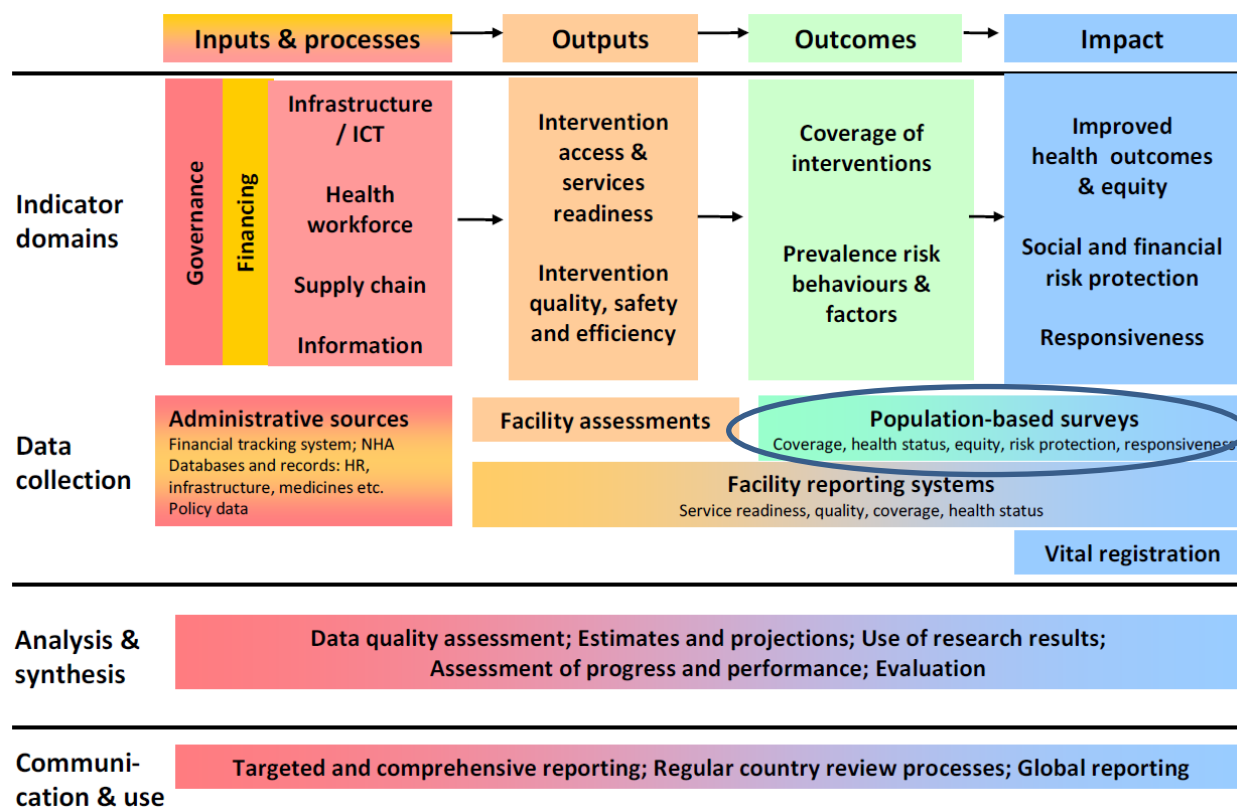
While extending beyond child health, the above components are completely aligned with the WHO Integrated Management of Childhood Illness (IMCI) technical approach, as they include the capacity building of primary care clinicians based at SDCs in addition to community health workers, improvement in the organization and management of service delivery at SDCs, as well as home and community visits to promote recommended child care and family nutrition practices, plus appropriate treatment-seeking for specific signs and symptoms of illness.

Outcome Evaluation Objectives

Medair's intent with the 2015 and 2016 KPC Surveys was to assess key indicators on a population-level in order to pinpoint any gaps existing between current behavioral health and access to care and program targets in order to inform needed changes. A population-based survey measuring outcome indicators, Figure 4 shows the overarching framework in which the present Outcome

Evaluation study is categorized. Medair's objective is aligned with the three building blocks in the Accountability Framework of the Commission on Information and Accountability for Women's and Children's Health— monitor, review and act – aimed at learning and continuous improvement (UN, 2011, p. 2). Over one week in December 2016, the KPC Survey measured target population coverage as well as both risk and protective behaviors in each respondent's household. This report presents 2016 results, Gavitt (2016) presents 2015 results, and Medair Lebanon (2017a) presents comparative 2015-16 results.

Figure 4 - Monitoring and Evaluation of Health Systems Strengthening (Source: WHO (2009). *Monitoring and evaluation of health systems strengthening: An operational framework*, p. 6)



Indicators Measured

Knowledge, practice and coverage indicators are the outcome measures in this survey. Outcome indicators were calculated based on items across all seven questionnaire sections: demographics, health contacts and sources of health information, health-seeking behavior, child health, reproductive health, family health, and receipt of Medair and other NGO services. Table 5 shows their alignment with global health program indicator sets described below.

Six of the eight coverage indicators recommended by the Commission on Information and Accountability (CoIA) for Women's and Children's Health (UN, 2011) for monitoring progress toward the goals of the UN Global Strategy for Women's and Children's Health are measured in the 2016 KPC Survey.

Nine of the 100 WHO Core Health Indicators (WHO, 2015) were calculated - two in the risk factor and seven in the service coverage domain -- most of which overlap with the aforementioned Commission's coverage indicators. In future years, Medair may wish to review this list to see if additional WHO Core Indicators used internationally could be incorporated into the KPC Survey.

Two currently active indicators in the US Department of State Standard Foreign Assistance Master Indicator List were also tracked by the 2016 KPC Survey.

Finally, the measures reported by the 2016 KPC Survey are aligned with the Coverage of Essential Health Services indicator in the Global Strategy for Women's, Children's and Adolescents' Health 2016-2030, in the Thrive section of the Survive-Thrive-Transform classification. That indicator is based on tracer interventions that include RMNCAH2: family planning, pregnancy and childbirth care, breastfeeding, immunization, childhood illnesses treatment, infectious diseases, non-communicable diseases, and service capacity and access. It is the proportion of people who need the intervention that receive it (Every Woman, Every Child, 2016, p. 9), and will be seen throughout the KPC Survey results, as applicable to each health domain inquired about in the questionnaire.

² RMNCAH = Reproductive, Maternal, Neonatal, Child and Adolescent Health

Indicators were each calculated using the values for one or more variables in the data set. The denominators used differed by questionnaire section and variable, based on the intended target population, e.g., contraceptive use among respondents residing with their husbands and exclusive breastfeeding of infants among respondents that have a child two years of age or younger.

Table 5 - Selected RMNCAH Indicators Measured in the 2016 KPC Survey Mapped to Global Health Program Indicator Sets

| 2016 KPC Indicator | Knowledge, Practice or Coverage | WHO 100 Core Health Indicators | CoIA 11 Indicators for Maternal & Child Health (UN) | US Dept of State |
|---|---------------------------------|--------------------------------|---|------------------|
| Exclusive breastfeeding 0-5 months of age | Practice | X | X | |
| Early initiation of breastfeeding | Practice | X | | |
| Contraceptive prevalence rate | Coverage | X | | |
| Antenatal care coverage | Coverage | X | X | |
| Births attended by skilled health personnel | Coverage | X | X | |
| Postpartum care coverage (within 2 weeks) | Coverage | X (within 2 days) | X (within 2 days) | |
| Care-seeking for symptoms of pneumonia | Coverage | X | | |
| Antibiotic treatment for suspected pneumonia | Coverage | | X | |
| Children with diarrhea receiving any form of treatment | Coverage | | | X |
| Children with diarrhea receiving oral rehydration solution (ORS) | Coverage | X | | |
| Children with diarrhea receiving zinc supplementation | Coverage | | | X |
| Immunization coverage rate by each vaccine in the national schedule | Coverage | X | X | |

Health equity

Over 93% of Syrian refugee households in West Bekaa, Zahle and Baalbek surveyed in mid-2016 reported having received needed primary health care services when they were needed over the preceding six months – including childhood vaccination, reproductive health care (antenatal care, postnatal care and family planning), and curative consultations for common illnesses -- in the most recent Vulnerability Assessment of Syrian Refugees (VASyR) in Lebanon (UNICEF, UNHCR, WFP, 2016). The 2016 KPC Survey looks at data on Syrian refugees in two types of living quarters (informal settlements and residential areas integrated into community) and Vulnerable Lebanese host communities that live in the same cadasters where Syrians reside for a comparative picture of the health ecology of the area, including any issues of equity between these subpopulations or strata. This type of analysis specifically contemplates:

the inverse care law: where there is more disease there is less care. The law, formulated by Jullian Hart in 1971, states, "The availability of good medical care tends to vary inversely with the need for it in the population served." By aggregating a substantial number of people with low disease burdens and high accessibility to services, population level averaging masks the unequal distribution of disease and suffering. This type of measure can drive inefficiency... Communities need to work on breaking the inverse care law by using appropriate measures. In order to improve outcomes under circumstances of limited resources, as often occurs in government systems, we must make every effort to target the right population. In this way, we can re-direct system leaders and most efficiently use scarce resources to improve the health of those most in need.... The principles of targeting services according to disease status and the redirection of resource allocation through appropriate outcome measurements is not new or unique, but are a key to breaking the inverse care law. (Tennant and Kruger, 2016)

By comparing data on Syrians in and outside of informal settlements as well as examining data on vulnerable Lebanese host communities, the Medair KPC Survey is able to highlight significant differences that may not appear when one looks for example at government statistics on the entire Bekaa governorate or humanitarian health assessments that provide data on all Syrian refugees in Lebanon without disaggregation by type of living quarters.

METHODS

Survey Preparation

Study Design

The present study is primarily a descriptive observational study with some elements of exploratory ecologic and cross-sectional analytical design (Table 6).

Table 6 - 2016 KPC Survey Characteristics and Study Design Classification

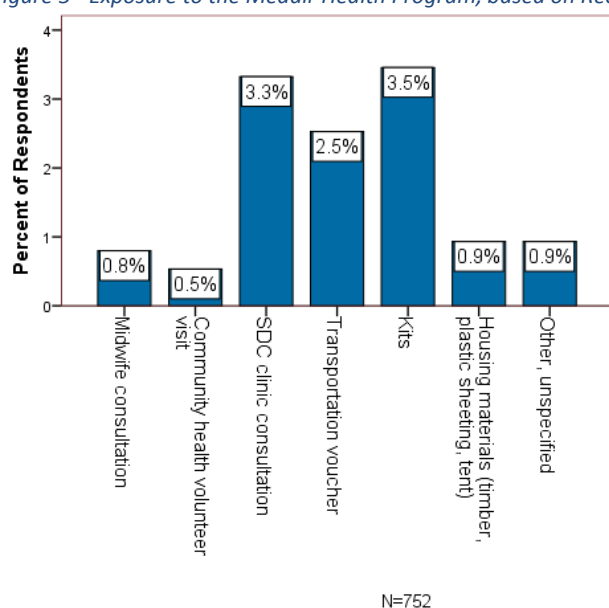
| Defining Characteristics | KPC Survey Details | Study Design Classification |
|---|--|-----------------------------|
| Focus is on indicators measured by person, place and time variables | | Descriptive observational |
| Does not have an a priori hypothesis | | Descriptive observational |
| Not designed to test a hypothesis or relationship between program exposure and outcome | | Descriptive observational |
| Focus is on describing the current situation | | Descriptive observational |
| Examines variations in outcome indicators across units | Strata, district | Exploratory ecologic |
| Exposure is not assessed | While there were questionnaire items on exposure to the Medair Health Program components within the past year, these data were not used for comparative analysis given their unknown temporal relationship to outcomes of interest. | Exploratory ecologic |
| Unit of analysis is the population | Significance testing is used to show differences in indicators between groups – strata, district – on an aggregate level | Exploratory ecologic |
| Sample of the population observed at a single point or brief period | Data collected over a one-week period in December 2016 | Cross-sectional analytic |
| Exposure and outcome assessed in the same time period; temporality cannot be determined | Medair cannot determine whether the exposure or the outcome came first given questionnaire design | Cross-sectional analytic |
| Unit of analysis is the individual | Medair has line-listed data from each respondent to the household survey and some of these are cross-tabulated, i.e., breastfeeding practices among women who had a vaginal versus C-section delivery, with any statistically significant differences noted) | Cross-sectional analytic |

Respondents' Exposure to the Medair Health Program during 2016

Exposure is defined as having visited one or more of the Medair-supported SDCs or having received a visit from a Medair-deployed CHW (Community Midwife or Community Health Volunteer) CHWs in the year preceding the household survey. Respondents were also asked if they received a transportation voucher and/or any kits, which would have been associated with a visit to a Medair-supported SDC. Both exposure to Medair Lebanon interventions and all outcomes of interest were asked about the same day in different questionnaire items. There would therefore be temporal issues with an analysis of exposure-outcome in this survey, as we cannot be sure that the Medair intervention was antecedent to a consequent health behavior or access to care indicator in the respondent's household during the course of the year. Furthermore, Figure 5 reveals that the overall exposure to Medair services was very low (under 4% for each service listed) according to the responses to the questionnaire item:

- Did you receive any services from Medair in the past year? If so, what services did you receive from Medair?

Figure 5 - Exposure to the Medair Health Program, based on Receipt of Medair Services in the Past Year



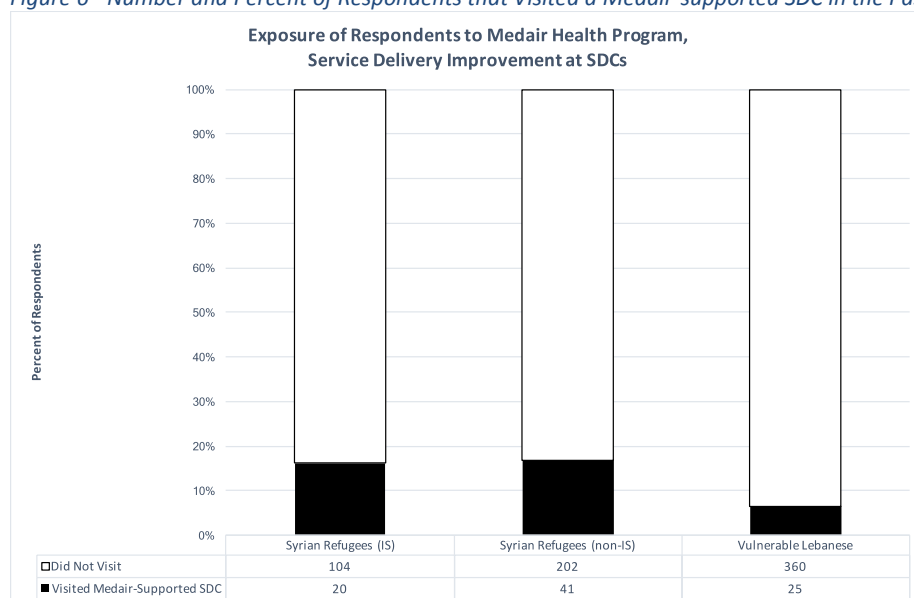
In another question in the survey, respondents were asked:

- In the last year, have you or your child/children needed medical services? If so, did you go to a health facility when you needed medical services? If so, which health facility did you go to? If an SDC clinic, which SDC?

During data transformation, the ten SDC clinics that are Medair-supported were coded as such. This prevented the information bias introduced if respondents did not know that the facility they visited was supported by Medair.

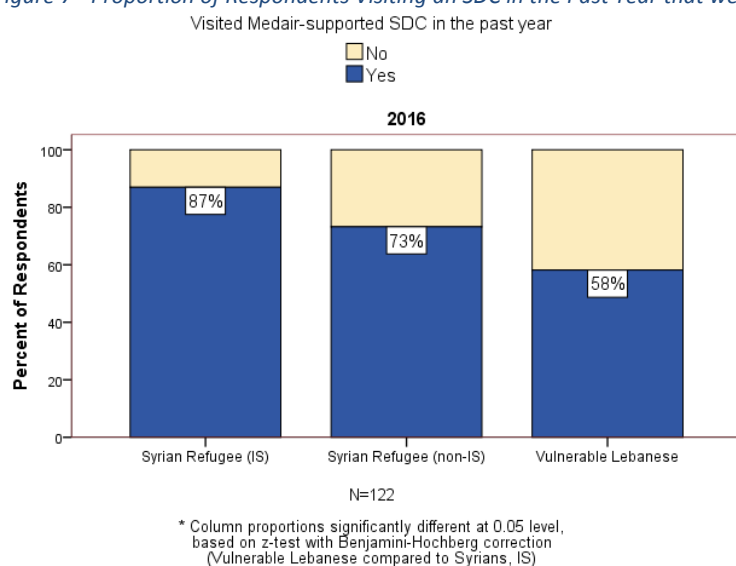
Figure 6 provides these results, and while a higher percentage than in the above question (3.3%) where respondents are directly asked about Medair services, only 11.4% of all 2016 KPC Survey respondents – and a lower number and proportion of Lebanese than Syrians – had visited a Medair-supported SDC during the year preceding their household interview.

Figure 6 - Number and Percent of Respondents that Visited a Medair-supported SDC in the Past Year, by Strata



Another way to look at the above data is that the majority of those respondents, all of whom reside within the Medair catchment area, that went to an SDC for their own or their child's healthcare in the past year had gone to a Medair-supported SDC, with Lebanese (58%) significantly less likely than Syrians, IS (87%) to have visited one of these (Figure 7).

Figure 7 - Proportion of Respondents Visiting an SDC in the Past Year that went to a Medair-Supported SDC



Another exposure-related item in the KPC Survey questionnaire measured respondents seen in the past month, but did not ascertain if the CHW was deployed by Medair. Medair CHWs conduct home visits solely to informal settlements within its catchment area. Yet several of the respondents saying they had interacted with a CHW recently in response to this question were Lebanese or Syrians living outside of IS, so Medair could not rule out that other NGOs were deploying CHWs to do home visits throughout the Medair catchment area, and deliver messages in Medair supported SDC's.

The lack of adequate data on the temporal relationship between exposure and outcome variables prohibited a comparative analysis of results in intervention and non-intervention subgroups. Furthermore, the sample size for exposed and non-exposed groups that would have been required to show effects was not calculated by the M&E team because this evaluation was not designed as a counterfactual or intervention vs. non-intervention study. The KPC Survey rather serves primarily as a descriptive observational picture of the current behaviors and access to care in the region via the calculation of indicators of knowledge, practice and coverage.

Aligned with the health equity goals listed above, in this report, outcomes are compared across both district and strata – three demographic subpopulations of interest to Medair – at a single point in time – rather than comparing exposed to non-exposed subgroups. The survey sampling frame was designed to assure adequate power in showing differences between the strata. A rigorous counterfactual or experimental study design was not possible within the given funding and staffing, along with the ethical review necessary for that design and the desired timeline for completion of the survey.

Questionnaire Design

The 2016 Medair KPC Survey questionnaire included items within the health domains listed in Table 7.

Table 7 -2016 KPC Survey Questionnaire Sections

| Sections | |
|---|--|
| 1. Demographics | 5. Reproductive Health |
| 2. Health Contacts and Sources of Health Information | a. Access to Quality Reproductive Health Services in the Community |
| 3. Health-seeking behavior | b. Family Planning/Child Spacing |
| 4. Child Health | c. Antenatal Care |
| a. Exclusive breastfeeding | d. Giving Birth in a Health Facility |
| b. Prevalence of Child Illness | e. Postnatal Care |
| c. Signs of Child Illness | f. Refugee Pregnancy |
| d. Treatment of Child's Fever | 6. Family Health |
| e. Treatment of Child's Diarrhea | a. Non-communicable Disease (NCDs) |
| f. Treatment of Child's Suspected Pneumonia (ARI) | b. Psychosocial Support Services |
| g. Vaccinations | c. Disability in Family Members 5 Years of Age and Older |
| h. Disability in Children Under Age Five | 7. Medair and other NGO Services |

Based on donors' results and reporting frameworks, the Medair Health Program M&E team ensured that the list of indicators to be measured in the 2016 KPC Survey aligned with donor requirements and measured internal Medair key performance indicators. The team then modified the 2015 KPC Survey household interview questionnaire, changing some existing questions and adding new modules on: disability in children under age 5, disability in family members age 5 and older, access to quality reproductive health services, psychosocial support services, and Medair and other NGO services. Katz, et al (2012) outlines the general steps followed in indicator selection for health systems strengthening programs.

Sample Size and Sampling Frame

The Medair M&E team calculated sample size requirements and put together a sampling frame for a stratified, cluster design household survey.

Through sample size calculation, Medair determined that a total of 720 households should be surveyed to attain the desired statistical power to show differences in the indicators important to the Medair outcome evaluation. Medair then employed a multistage cluster sampling design with probability proportional to size (PPS) to identify specific cadasters and geographic starting points for the identification of households to be surveyed, for each of the three strata. The result was:

- 360 Syrian refugee households in a 30 cluster x 12 household design
 - 120 Syrian refugee households in informal settlements (IS), 4 HH per cluster
 - 240 Syrian refugee households outside of IS, 8 HH per cluster
- 360 vulnerable Lebanese outside of IS in a 30 cluster x 12 household design

A total of 858 started and 754 completed the 2016 KPC survey. See Medair, 2017b, which is available upon request from Medair Lebanon - for the sample size calculation and detailed sampling documentation by stage.

Demographic Data

There is always concern about the reliability and availability of quality demographic data in Lebanon given that the country has not had a national Census since 1932; this is particularly of concern given the recent influx of a significant number of international migrants from neighboring Syria. However, Medair looked for the best currently available data from the government and humanitarian sector agencies.

The base demographic data for the KPC survey sampling frame were from two sources:

- Data on the Syrian refugee population by cadaster and settlement from the Medair GIS Team (IAMP).
- Data on Syrian refugees not living in settlements from UNHCR registration and municipalities.
- The population of vulnerable Lebanese by cadaster was sourced from LCRP organizations and municipalities.

When Medair staff approached municipalities for demographic data, they also briefed them on the KPC Survey and some refused entry to Medair teams, which eventually led to the exclusion of a short list of sampled cadasters from the field data collection and final data set (Medair, 2017b contains that list).

Data Collection

Medair enumerators collected the household survey data between December 10th and 16th, 2016.

Enumerator Selection and Training

Medair selected female enumerators that had prior experience conducting surveys and assessments with Medair. Medair conducted training over two and a half days, covering both the questionnaire and theory. The training topics were:

- General tips
- Role of enumerator and supervisor
- Questionnaire overview and content
- Proper interview techniques
- Definition of vulnerable Lebanese
- Directions to SDCs
- Selection of households within cadasters
- Data collection tracking tools
- Birth guide
- Interview practice

Female enumerators were selected due to the intended target population and the topics covered in the questionnaire. In addition, Medair conducted field testing in an area not selected in the sampling frame to identify potential coding and calculation errors, and discussed feedback from the field test with enumerators on the last day of the training.

Fieldwork with Questionnaire Data Entry onto Mobile Devices

Medair set up the 2016 KPC Survey questionnaire on tablets using ODK software, and sent enumerators to the field for mobile data collection, with real time data entry on tablets. No paper forms were used, and enumerators verbally interviewed the respondents

rather than showing them the questions on the mobile devices. Enumerators visited both informal settlements and surrounding communities according to the Sampling Frame.

Enumerators visited more homes than those that eventually responded to the survey, but as these were not all entered into questionnaire form on the mobile device, the response rate could not be calculated.

All interviews were conducted in respondents' homes in Arabic. The ODK multiple choice answers were recorded in Arabic Arabicising the ODK software screens and free text responses werelater translated by Medair staff for inclusion in the final, English-language data set for analysis.

Field Issues with Data Collection

Field issues were mostly linked to finding households in the non-IS setting. In addition, the lack of privacy in large households led to the interruption of some interviews. Finally, given the mid-December data collection dates, there were weather constraints due to snow.

Analysis

Given the demographic data limitations listed above and discussed in Medair Lebanon, 2017b, Medair M&E staff requested that the health informatics consultant not apply weights during data analysis for its KPC Survey statistical reports.

IBM SPSS Statistics software, version 24, was used for statistical data analysis. During data cleaning and transformation, the health informatics consultant created Multiple Response Variables in the Custom Tables module for each questionnaire item that allowed respondents to select more than one response item and recoded all free text responses into categorical variables. Data analysis of the survey data set included the calculation of exploratory and descriptive statistics, comparison of means using ANOVA and Tukey's HSD post-hoc test, comparison of medians using the Independent Samples Median Test, a nonparametric procedure, and comparison of column proportions using z-tests and the Benjamini-Hochberg correction. Significant differences, confidence intervals, and data visualization are presented in this report for applicable variables. Some graphs presented in the report were created using Microsoft Excel 2016.

Human Resources

From conception through planning, design, field work, analysis and write-up of results, conducting a household survey involves personnel with specific interpersonal and technical knowledge and skills. The 2016 KPC Survey, which was designed in English but conducted verbally by interviewers in Arabic, required Arabic language fluency and good listening skills. Figure 8 lists the staff and consultants that carried out work on the various stages in the 2016 KPC Survey. The Medair Health Team is led by a physician who received his medical degree and includes trained doctors and nurses trained in Lebanon. The Medair Health Advisor has a Masters of International Public Health from the Liverpool School of Tropical Medicine. The Medair M&E Team is led by a Project Manager who received her Master of Public Health from Columbia Mailman School of Public Health. The Health Informatics Consultant has a Master of Health Sciences degree in Population Dynamics from the Johns Hopkins Bloomberg School of Public Health, completed a postgraduate fellowship in Public Health Informatics at the US Centers for Disease Control and Prevention (CDC) as well as continuing education in project management and statistics at the American University of Beirut.

Figure 8 - Human Resources Employed from Survey Preparation through Statistical Analysis

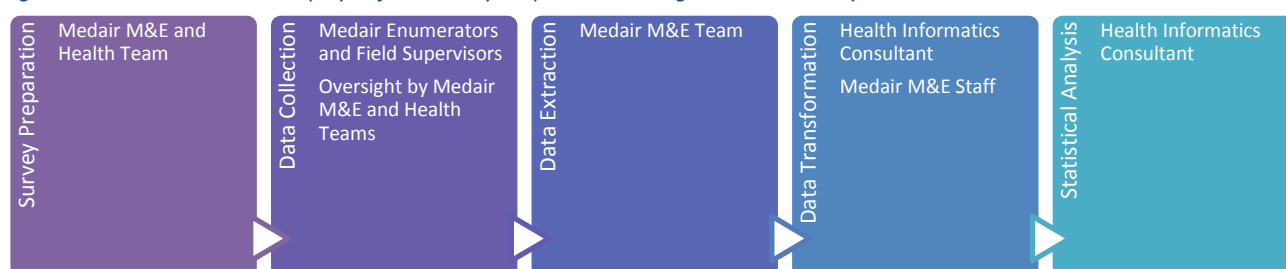
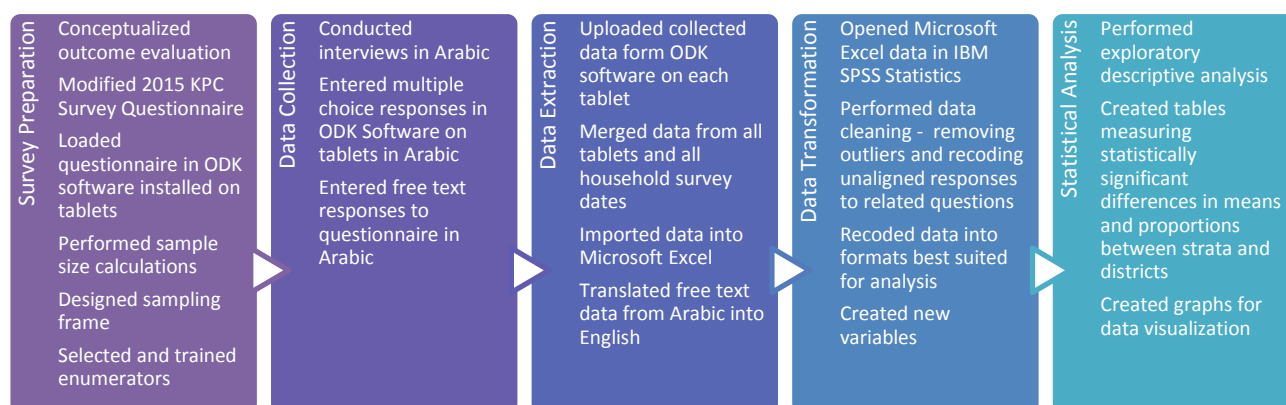


Figure 9 - List of Activities Performed at Each Stage from Data Preparation through Statistical Analysis



Quality Control

The human resources, whether staff or consultants, assigned to carry out each stage of the survey process took relevant measures to assure the quality of their work.

During survey preparation, standard equations and methods were referred to in completing sample size calculations and in designing the sampling frame.

During data collection, Medair enumerators were supervised by a team of Medair staff deployed to oversee data collection and resolve any issues. The field supervisor accompanying each team of enumerators checked the surveys before uploading the data from the mobile devices to the ODK server, on a daily basis. At the end of the data collection period, the data were downloaded and extracted from the server into a Microsoft Excel spreadsheet. By tabulating the number of records expected from each enumerator based on tracking sheets, it was assured that all respondent data was in the merged file.

The Medair M&E Lead and Health Informatics Consultant reviewed the frequency and cross-tabulation data for all variables together and jointly decided how to deal with outliers and data that were not aligned via recoding, deleting values, or even deleting entire records. For example, a data entry error on respondent stratum during the fieldwork had caused one enumerator not to be prompted to ask all of the right questions during data collection due to skip patterns programmed into the ODK software, so that entire record had to be discarded prior to analysis.

During recoding and data analysis, the Health Informatics Consultant checked recodes against the original data, and kept all copies of the data set as it evolved. In her 2016 KPC Survey preliminary analysis document, the consultant noted discrepancies between standard SPSS percentage calculations for Multiple Response variables when comparing Custom Tables to graphs created using Chart Builder. While Custom Tables used respondents as the denominator, Chart Builder was using responses as a denominator, leading to a mismatch of data presented in the report. This led the consultant to re-analyze all Multiple Response indicator data, this time creating the graphs directly in the SPSS Output window based on the Custom Table for each variable.

With regard to report-writing, the consultant routinely sent the Health and M&E Teams preliminary data analyses for review and comment so that any errors or misinterpretation of the data might be caught prior to the final draft report. Finally, the consultant prepared an exhaustive set of Technical Documents for any potential data users interested in secondary analysis of the 2016 KPC Survey data set.

Limitations

Theoretical

Logically, additional constructs need to be inserted into the current KPC model between the knowledge and practice circles shown in Figure 10. In doing so, one asserts that knowledge is not power and that agency is required to move from knowledge to practice and thereafter, coverage. We might ascertain via additional questionnaire items on women's agency why practice may not match knowledge; however, there are limitations to the way that surveys currently gather these data:

The existing state of women's agency measurement – both disorganized and partial - results in a reduced understanding of constraints women face in exercising agency and diminished ability to design interventions and understand intervention success or failure. ... women's participation in household decision-making – the most commonly operationalized construct of agency – is measured differently across studies (Donald, et al, 2016, p. 3).

Figure 10 - The Knowledge-Practice-Coverage Continuum Used in the 2016 KPC Survey

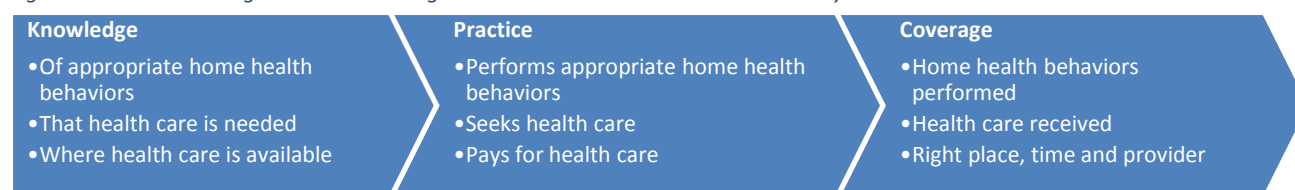


Table 8 lists the household decision-making questions in the Demographic Health Surveys (DHS). The concept of agency would be better represented if Medair Lebanon added the question items below regarding who makes decisions on contraception and the respondent's health care as well as new questions on who makes decisions regarding the children's health care, including but not limited to who to ask for advice, where to go for treatment, the transportation to get there, payment for services, and purchase of medications.

Table 8 - Household decision-making questions asked of Women of Reproductive Age in the Demographic and Health Surveys

| Who usually makes decisions about | Responses |
|---|---|
| Using contraception | Mainly your decision; Mainly your husband's/partner's decision; Did you both decide together? |
| How respondent's earnings will be used | Respondent; Husband/partner; Respondent and husband/partner jointly; Someone else; Other |
| How husband/partner's earnings will be used | |
| Health care for respondent | |
| Large household purchases | |
| Visits to family/relatives | |

Empirical

Typical sources of error in evaluation studies as related to the KPC are addressed in Table 9 (Coggon, et al, 1997, ch.4).

Table 9 - Relevance and Mitigation of Potential Sources of Error and Bias to the 2016 KPC Survey

| Potential Sources of Error and Bias | Definition | Relevance and Mitigation in the 2016 KPC Survey |
|-------------------------------------|---|--|
| Selection bias | When the individuals studied are not representative of the target population about which conclusions are to be drawn. | The KPC Surveys were a multi-stage stratified sample, with sample size calculated for each strata in order to be able to show significant differences among outcomes of interest. Both probability proportional to size and random sampling were used in the selection stages. Medair views this approach to have prevented selection bias to the extent possible. |
| Nonresponse bias | When sampled households are not interviewed, and these non-respondents differ in meaningful ways from respondents. | We do not have estimates of the nonresponse rates for the 2016 KPC Survey as not all approached households were entered into the mobile device. As we cannot calculate the rate, we also cannot compare characteristics of non-responding and responding households to see if there were meaningful differences. Correction of this approach is recommended in future waves of this survey. |
| Information bias | Errors in measuring exposure or outcomes | Exposure is defined as having visited a Medair-supported SDC or having received a home visit from a Medair CHW in the past year. KPC Survey respondents may not have recalled or listed all of the SDCs visited, and thus they were not coded as being exposed in the data set. KPC survey respondents may not have known or reported if the CHW they saw was deployed by Medair. Outcome indicators are calculated from most of the variables in the survey data set. Recall or not telling the truth about any question perceived as sensitive or stigmatizing, or giving answers based on perceived acceptable rather than actual behavior (Social Desirability Bias) may have impeded accurate relay of data from respondent to enumerator. Lying for any reason without regard to social desirability would have the same effect on the data set but may be random rather than skewed in one direction. Data entry errors on the mobile device may be sources of error for either variable. |
| Measurement error | The validity of the survey to measure the exposure and outcomes | If questions were not worded optimally in English or the translation into Arabic, or if they were not understood by respondents, this could have led to measurement error. It is impossible in this scenario to calculate sensitivity or specificity of the survey questions as we only know observed values and not the underlying true values, were they to differ from the observed. Using repeatability in this household survey was determined to be an undue burden on the respondents and likely would have led to refusals to be interviewed twice. There may have been within observer variation if the enumerators probed households differentially or between observer variation if different enumerators used different interviewing techniques. Standardization via training and supervised practice interviews can address this. Random subject variation in surveys is difficult to control, as some respondents may just decide to lie in different manners each time they answer a questionnaire; this is largely unavoidable and undetectable (except potentially through outlier analysis) even with extensive enumerator training. |

RESULTS

The results of the analysis are presented below either as 2016 totals or by strata. Data are also shown by district when there were significant differences by geographic area.

Demographics

A total of 752 respondents from the same number of households completed the 2016 Health and Nutrition KPC Survey. Half of the sample was comprised of Vulnerable Lebanese and half of the respondents were Syrian refugees. One-third of the Syrian refugees were living in informal settlements (IS), and two-thirds were living outside IS integrated with the Lebanese host community (Table 10). Table 11 shows the current, reflecting population breakdown in the Bekaa Valley for comparison.

Table 10 - Sample Size, by Strata

| Strata | Frequency | Percent | Cumulative Percent |
|-------------------------|------------|--------------|--------------------|
| Syrian Refugee (IS) | 124 | 16.5 | 16.5 |
| Syrian Refugee (non-IS) | 243 | 32.3 | 48.8 |
| Vulnerable Lebanese | 385 | 51.2 | 100.0 |
| Total | 752 | 100.0 | |

Table 11 - 2016 Population Size by Strata and District, Bekaa and Baalbek/El Hermel Governorates, Lebanon (Source: OCHA, 2016)

| POPULATION COHORTS | Zahle | West Bekaa | Rachaya | Baalbek | El Hermel |
|-----------------------------|---------|------------|---------|---------|-----------|
| Lebanese above poverty line | 140,399 | 46,006 | 23,273 | 133,310 | 21,073 |
| Deprived Lebanese | 36,426 | 19,437 | 9,832 | 94,180 | 14,887 |
| Lebanese returnees | 2,668 | 1,292 | 245 | 9,861 | 2,260 |
| Registered Syrian Refugees | 167,174 | 62,805 | 10,050 | 119,447 | 6,079 |
| Palestine Refugees | 7,672 | 4,975 | 188 | 5,117 | 0 |

Geography

Table 12, Figure 11 and Figure 12 show the geographic distribution of respondents. Out of those interviewed, nearly 60% were residing in Central Bekaa (Zahle) district, a quarter in North Bekaa (Baalbek) and under a fifth were living in West Bekaa and Rachaya districts (these are two separate administrative units that Medair has grouped together for analysis). West Bekaa and Rachaya had a larger proportion of Syrians (66%) than Zahle (47%) and Baalbek (39%). The greatest number of informal, tented settlements was visited in Zahle.

Table 12 - Sample Size, by District

| District (Kazaa) | Frequency | Percent |
|----------------------|------------|--------------|
| North | 186 | 24.7 |
| West Bekaa & Rachaya | 132 | 17.6 |
| Central | 434 | 57.7 |
| Total | 752 | 100.0 |

Figure 11 - Number of 2016 KPC Survey Respondents, by District, Cadaster, and Strata

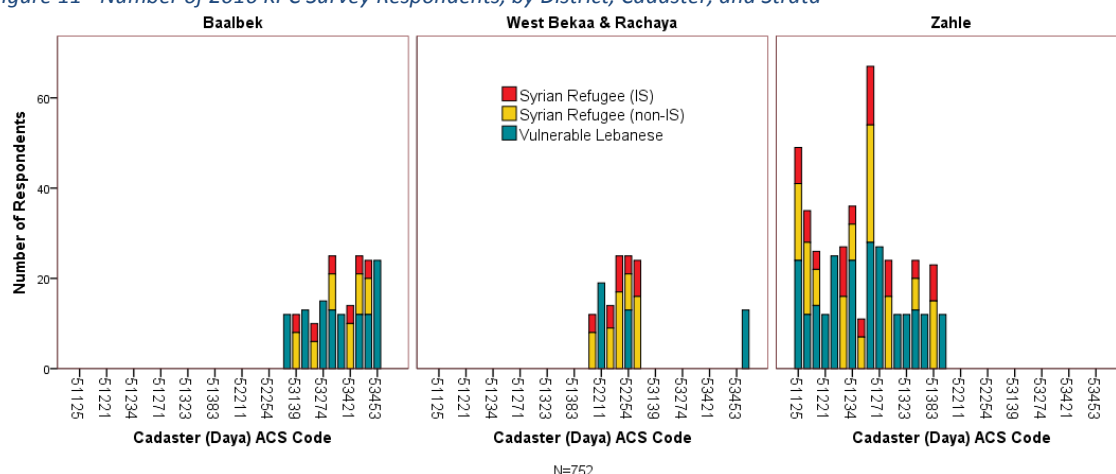
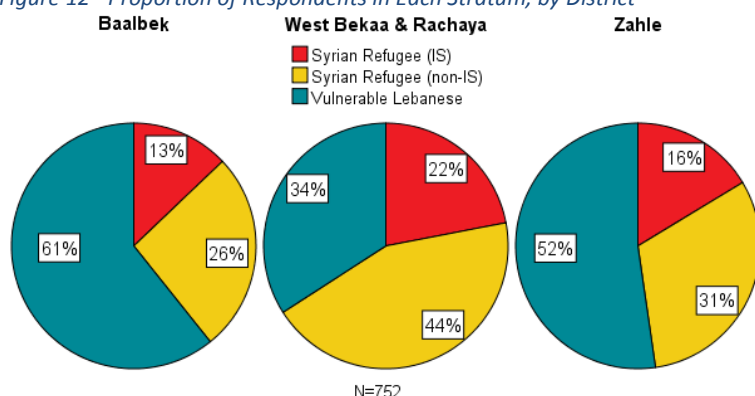


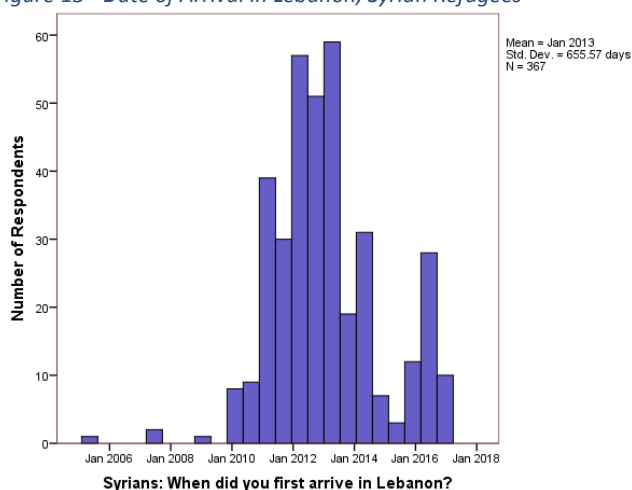
Figure 12 - Proportion of Respondents in Each Stratum, by District



Migration

Only a few of the Syrian refugee households in the sample data set had arrived in Lebanon prior to the beginning of the recent major migration stream that started in 2011 (Figure 13).

Figure 13 - Date of Arrival in Lebanon, Syrian Refugees

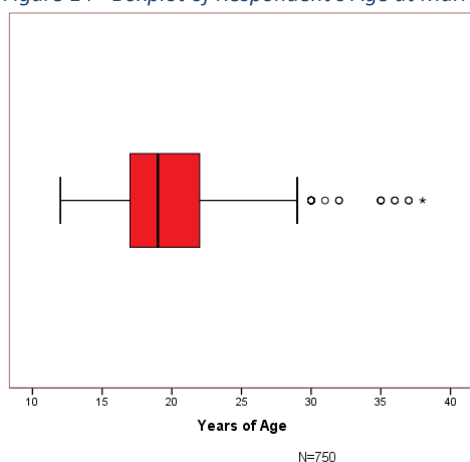


Marriage, Pregnancy, Motherhood

In order to be eligible to be surveyed, respondents had to be women of reproductive age and be caring for at least one child under the age of five that lived with them in the same household.

The majority (99.7%) of respondents were currently married or had been married at some point, with no significant differences by strata or district. However, only 93.6% of all respondents currently lived with their husband, and Lebanese (96.9%) were more likely to be living with their husband than Syrians, IS (89.5%) and Syrians, non-IS (90.5%).

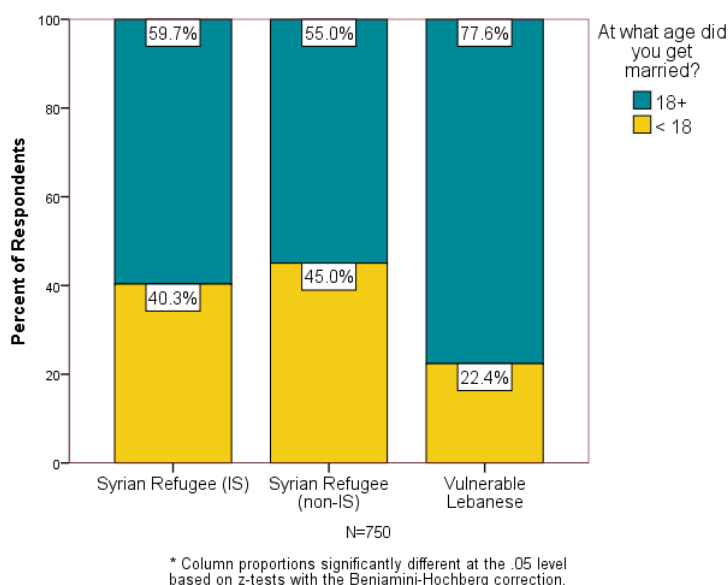
Figure 14 - Boxplot of Respondent's Age at Marriage



The age at marriage ranged from 12 – 38 years, with a mean of 19.7 years overall (Figure 15). This differed significantly both by strata and district. Lebanese and residents of Baalbek both had a higher average age at marriage (20.5 years) than their counterparts in other categories. Figure 15 illustrates that early marriage – before the age of 18 years – was much more prevalent among Syrians, IS (40.3%) and Syrians, non-IS (45.0%) than among vulnerable Lebanese (22.4%).

Nearly a fifth (18.2%) of women interviewed were currently pregnant and 98.7% were the mother (as opposed to the caretaker) of at least one of the children under age five in her household.

Figure 15 - Percent of Respondents that Married before and after age 18, by Strata



Household Composition

Household size was calculated by adding the respondent, her husband, and the numbers of children < 5, children age 5-17, and additional co-resident family and friends (Figure 16 shows the mean number in each category) as there were questionnaire items on each of these. Syrians, IS reported the largest mean number of children < 5, children 5 – 17, and relatives and friends living with them compared to the other strata. As shown in Figure 17, the majority of respondents have household sizes of 4 – 6 people, and there are high outliers in all strata. The mean household size was 7.21 among Syrians, IS, 6.26 in Syrians, non-IS, and 5.55 among vulnerable Lebanese.

Syrians, IS (24.2%) were the most likely to have 3 or more children < 5 in the household – compared to fewer than a tenth in the other two strata. Respondents living in West Bekaa and Rachaya (15.2%) also were more likely to have 3+ children <5 compared to those living in Zahle (12%) and Baalbek (6.5%).

Figure 16 - Mean Number of Respondent Household Members, by Category

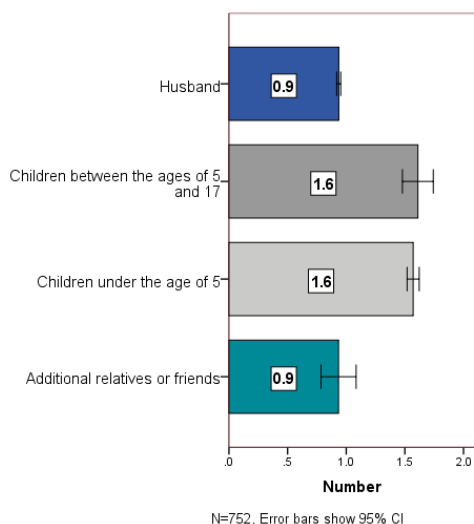
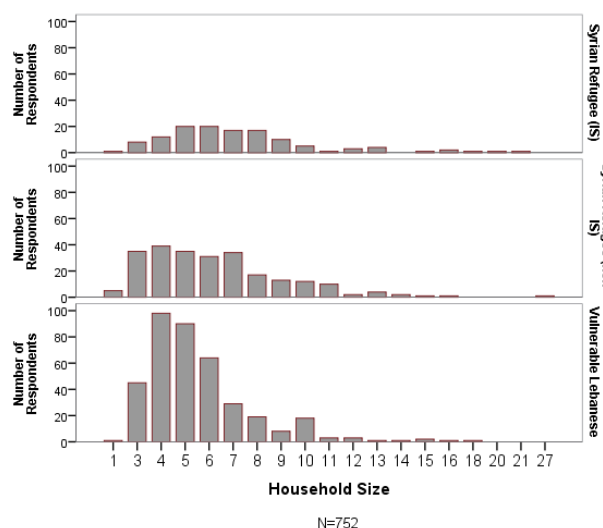


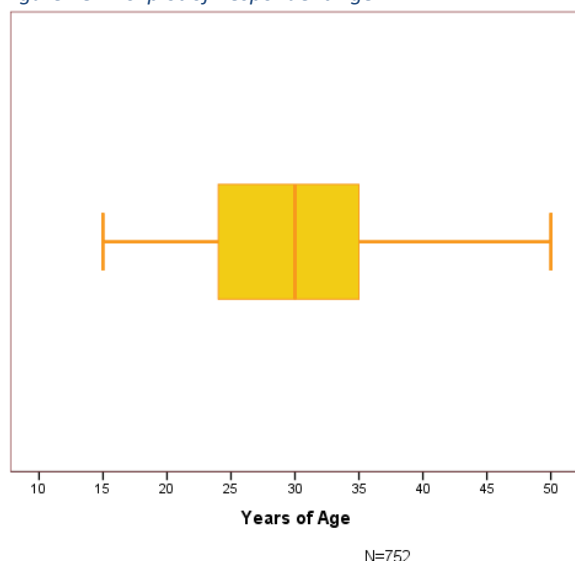
Figure 17 - Total Household Size Frequency Distribution, by Strata



Ages of Respondent and Children that Reside with Her

The mean age of respondents was 29.8 years (Figure 18), and ranged from 15 to 50 years. There was a small but significant difference between strata: 28.8 in Syrians, non-IS, 30.2 in Syrians, IS, and 30.3 years in Lebanese.

Figure 18 - Boxplot of Respondent Age



The mean age of all children < 5 in the respondent's household was 29.8 months. The ages of the youngest and oldest child under five years was asked in order to compute denominators for specific indicators. Both ranged from 1 – 59 months, with the mean age of the youngest child being 24.1 months (2 years) and mean age of the oldest child < 5 being 35.7 months (about 3 years). Respondents reported that the average age of their oldest child of any age was seven years.

Health Contacts and Sources of Health Information

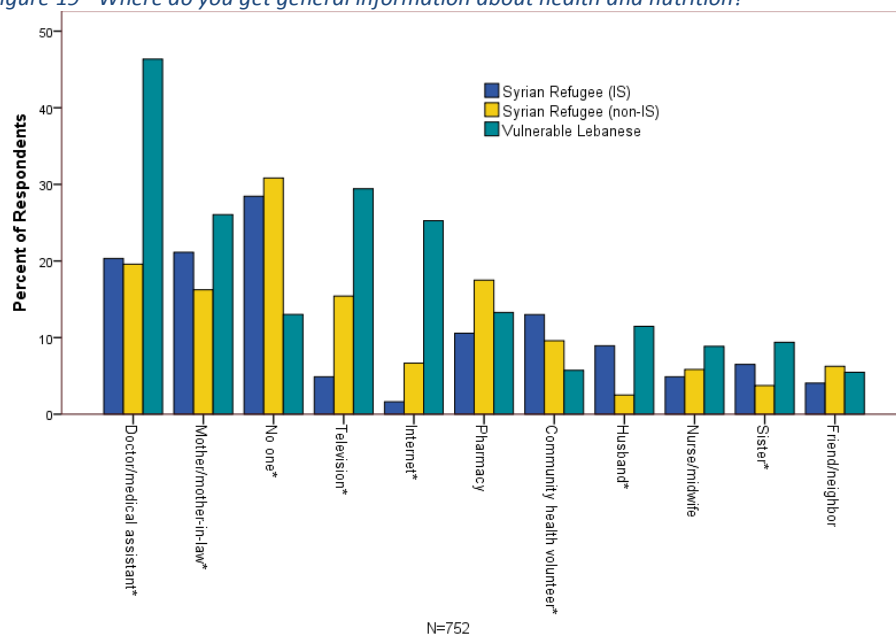
Vulnerable Lebanese respondents (25.5%) were more likely than Syrians, IS (12.9%) and Syrians, non-IS (10.3%) to have come into contact with health clinic staff in the previous month. All strata were equally likely to have recently come in contact with other categories of people in relation to their own or their family's health care:

- Community Health Worker or Volunteer, 7.8%
- Community Midwife, 4.4%
- Friends and family, 3.6%
- Physician/specialist, 2.3%
- Nutritionist, 0.5%
- Community Services Staff, 0.4%
- Hospital Midwife, 0.1%
- Pharmacist, 0.1%
- Religious Leaders, 0.1%

Among all respondents, 15.8% had seen health clinic staff sometimes and 2.7% had seen them frequently in the last month. Nine percent reported seeing a CHW/V sometimes and 1.9% saw one frequently in the past month. Three and a half percent saw a Community Midwife sometimes and 0.9% saw one frequently. One and a half percent had seen a doctor frequently and 0.8% saw one sometimes. Nearly three percent (2.7%) saw friends and family frequently and 0.9% sometimes in the previous month in relation to health care.

Figure 19 shows that there were significant differences between strata with regard to their general sources of information on health and nutrition. Respondents could select all sources that applied to them, so the percentages add to more than 100% for each subpopulation. Lebanese were much more likely than Syrians to get health information from a doctor/medical assistant, television, Internet, as well as mother-in-law, husband and sister. Syrians were more likely to get information from a Community Health Worker or no one. All strata were equally likely to go to a pharmacy, nurse/midwife or friend/neighbor for health information.

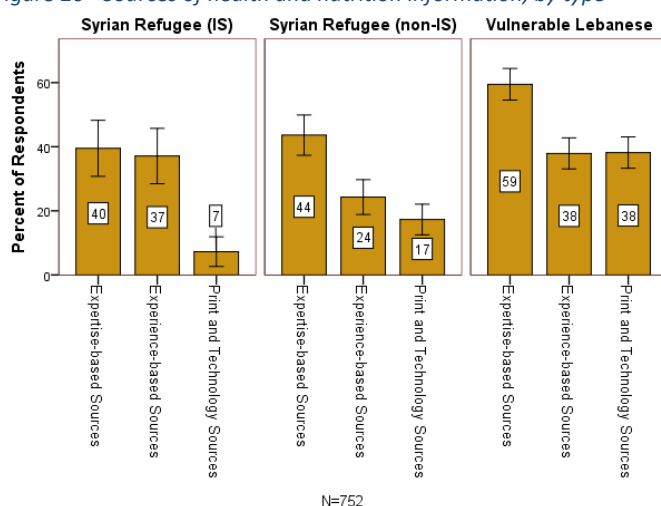
Figure 19 - Where do you get general information about health and nutrition?



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

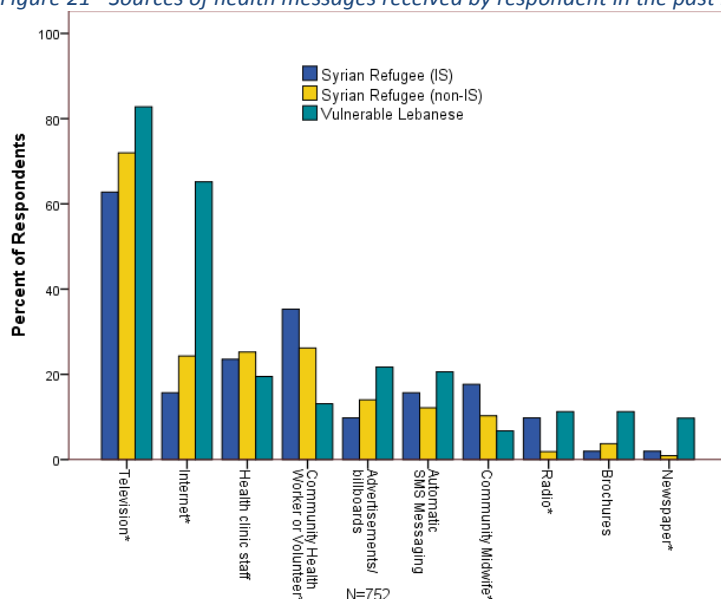
Figure 20 takes the same data (except the response “no one”) put into categories: expertise-based, experience-based and print or technology sources. The latter can be based on either experts (e.g., a magazine article written by a dietitian or surgeon) or laypersons relaying their own health experience (e.g., online patient support groups). While Syrians, non-IS and vulnerable Lebanese both preferred expertise-based sources over experience-based and print and technology sources, Syrians, IS listed both expertise and experience-based sources more than print and technology sources. Residents of Baalbek (59.7%) were more likely to get information from expertise-based sources, compared to 48% in the other districts. A third of respondents from Baalbek, a quarter of those from Zahle and a fifth from West Bekaa and Rachaya mentioned getting general health information from print and technology sources.

Figure 20 - Sources of health and nutrition information, by type



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

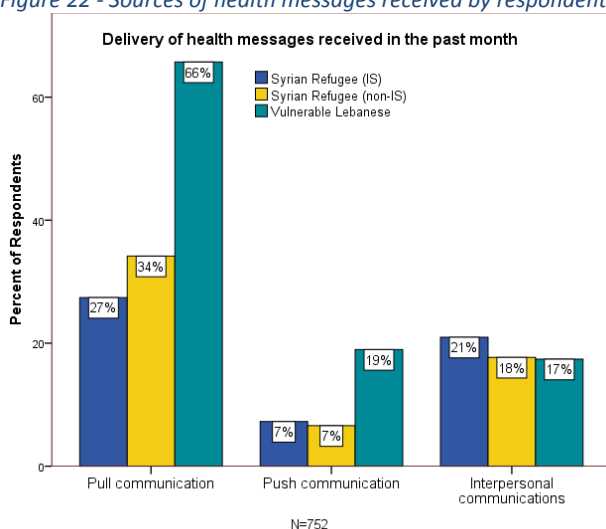
Figure 21 - Sources of health messages received by respondent in the past month, by Strata



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

When asked about the source of health messages received in the past month, Syrians, IS were the most likely to list Community Midwife and Community Health Worker, which aligns well with the Medair Health Program given that it exclusively deploys these cadres to work in informal settlements. All strata were equally likely to list health clinic staff, advertisements/billboards, automatic SMS messaging, and brochures. Television and Internet were listed by significantly more Lebanese, followed by Syrians, non-IS, and Syrians, IS. Syrians, IS and vulnerable Lebanese were more likely than Syrians, non-IS to list radio and Syrians overall were less likely than Lebanese to list newspaper as a recent source of health information (Figure 21).

Figure 22 - Sources of health messages received by respondent in the last month, by mode of communication



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

Figure 22 groups the same information into categories, and reveals that vulnerable Lebanese are more likely than Syrians to have received recent health messages via both pull and push communications. All strata were equally as likely to have had interpersonal communications containing health messages in the past month. Pull communications are published information sources that require the user to seek and access them, while push communications are sent directly to specific audiences but may not always reach or be understood by intended targets. Interpersonal communication is face-to-face, interactive communication which allows for the interchange of information including questions and answers for clarification. Fifty seven percent of Baalbek respondents, 47% of those from Zahle and 44.7% of the women from West Bekaa and Rachaya that were interviewed had received a recent health message via pull communications.

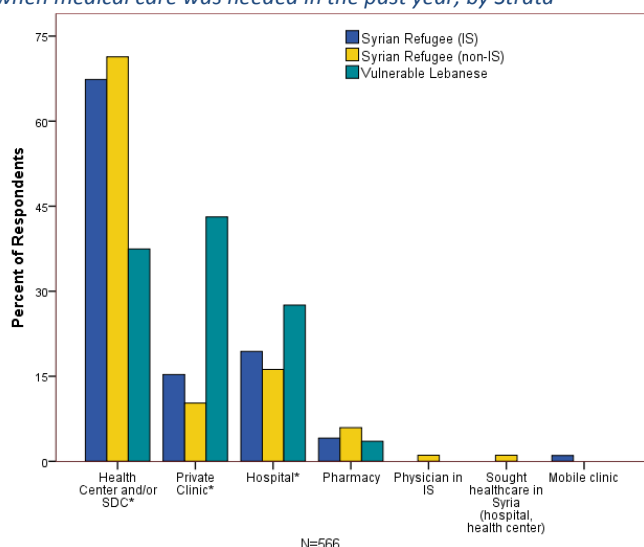
Health-Seeking Behavior

Types of Health Facilities Visited in the Past Year

Across all strata and districts, an average of 83.4% of respondents said that they or their child/children < 5 had needed medical services within the past year. Of those, 90.7% went to any type of health facility. While respondents in all three strata were equally likely to have visited a pharmacy, Figure 23 shows the types of facilities they visited, including definite preference differences between the three strata, e.g., a greater proportion of Lebanese than Syrians going to private clinics and hospitals.

While published UNHCR maps highlight the deployment of mobile medical units in the Bekaa, few survey respondents reported having visited one in the past year, indicating that there may be a need for additional public awareness of the services that they offer, their locations, and hours of operation.

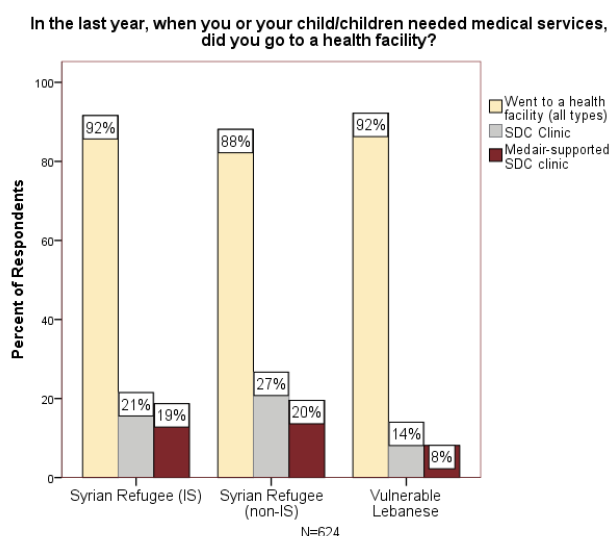
Figure 23 - Among those who sought medical care at a health facility, type of facility respondent and/or her child/children visited when medical care was needed in the past year, by Strata



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

Over half (54%) of respondents across all districts went to a health center and/or SDC. More Syrians than Lebanese chose to go to a health center and/or SDC -- 67.3% of Syrians, IS, 71.4% of Syrians, non-IS and 37.5% of vulnerable Lebanese. The proportion that went to a Medair-supported SDC differed by both strata and district. Just over a fifth of Syrians but less than a tenth of Lebanese had gone to a Medair-supported SDC (Figure 24).² Nearly 32% of respondents from Bekaa and Rachaya, but only 12.7% of those living in Baalbek and 11.2% of those living in Zahle had gone to one of these. Figure 25 shows the specific SDCs visited and whether each was supported by Medair in 2016.

Figure 24 - Treatment-seeking for respondent or her child/children during the past year at any health facility, at an SDC, and at a Medair-supported SDC, by Strata

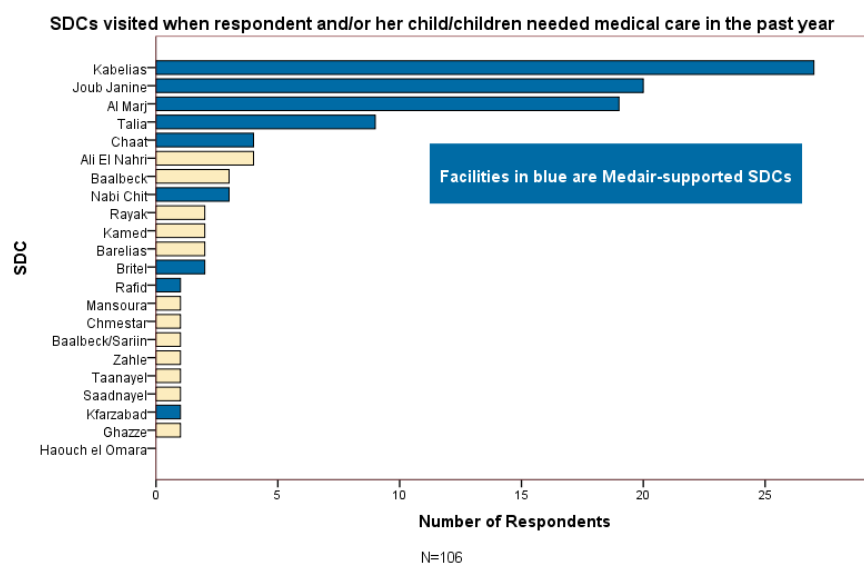


* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

The ten percent of respondents (N=58) that did not go to a health facility when they or their young child or children were ill in the previous 12 months were asked why not, and most said that they did not think it was necessary, leading Medair to believe they must have confidence in treating themselves or their children at home – further reinforcing the importance of ensuring that mothers have the right knowledge and home health behaviors. This response was followed in decreasing frequency by the following reasons:

- The health facility was too expensive
- I do not know where a clinic is
- I was not able to find transportation
- The health facility was too far away
- I have heard bad things about the health facility
- I do not like the health facility (people, atmosphere)
- Lack of registration papers/cards (UNHCR or other)
- Was refused care/treatment at the health facility
- Fear

Figure 25 - Number of respondents visiting each SDC for herself and/or her child/children in the past year, and indication of whether each is supported by Medair



Given the density of health facilities in the Bekaa governorate, the prohibitive cost, not knowing where a clinic is, and/or transportation and distance were priority access issues means that additional public education is needed on locations³, prices, hours, etc. Furthermore, at a household level, these responses may be masking that a woman does not have the ability to travel during the day with her children without her husband's permission or that she does not control the household budget enough to be able to take a taxi to a source of medical care and/or pay for these services when needed.

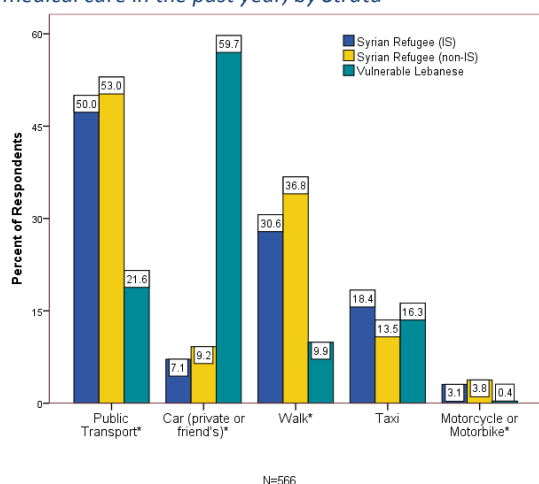
Fortunately, despite the widely published and aforementioned legal issues of Syrians in Lebanon, lack of registration cards and/or current legal residency status, being refused service, or fear were only mentioned by a few respondents as barriers to access to health care. Quality of care concerns were also listed by only a few respondents.

Distance and Travel Time to a Health Facility

Respondents were asked how they got to the health facility or facilities that they visited in the past year, and how long it took to get there. Syrians were more likely to walk, take public transport (e.g., bus or service), or ride a motorcycle to health facilities, whereas Lebanese were more likely to go in their own or a friend's car. About one-sixth of all respondents across strata took taxis, with a greater proportion of residents in Zahle (20%) than those living in other districts (10%) traveling this way. Walking was least common among residents of Baalbek (15%) compared to about a quarter of respondents in the other districts (Figure 27). This may be due to more sparsely located facilities in that district, a topic for further investigation by the Medair GIS Team.

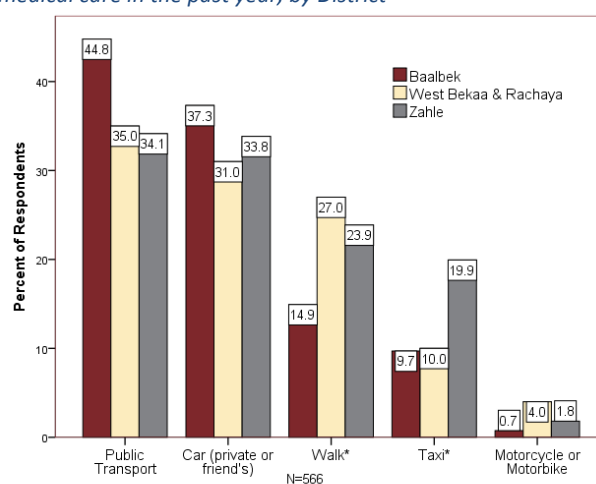
³ The Medair Health Informatics Consultant is sharing these results with the Medair GIS team for further spatial analysis, as the distance and transportation issues may indeed be from households located in outlying areas far from the network of facilities shown on UNHCR maps. This can easily be ascertained for program intervention purposes, such as new recommendations on the placement of mobile units.

Figure 26 - Mode of transport between respondent's residence and the clinic she visited for her own and/or her child/children's medical care in the past year, by Strata



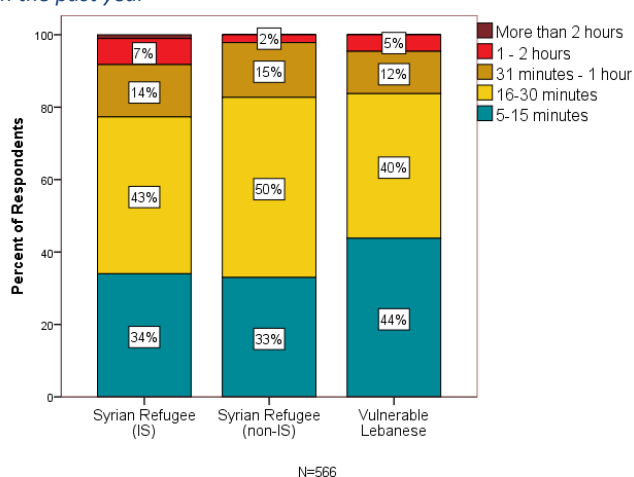
* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

Figure 27 - Mode of transport between respondent's residence and the clinic she visited for her own and/or her child/children's medical care in the past year, by District



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

Figure 28 - Travel time between respondent's residence and the clinic she visited for her own and/or her child/children's medical care in the past year



A third or more of respondents across strata could reach a health facility within 15 minutes, 80% could reach one within 30 minutes, and over 90% could arrive within an hour (Figure 28). The few respondents that reported traveling over one or two hours to get to a facility may be related to the location of the nearest facility in combination with the mode of transport. Additional spatial investigation of these cases may provide useful insights.

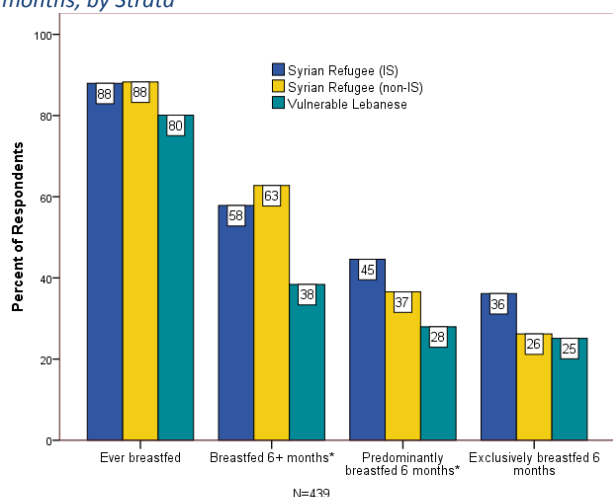
Child Health

Exclusive Breastfeeding

Promotion of the early initiation of breastfeeding for both maternal and neonatal health is a key component of Infant and Young Child Feeding (IYCF) programs globally. And as Kramer and Kakuma (2008) conclude from their systematic review on the optimal duration of exclusive breastfeeding, there are many health benefits for the child to be given only breast milk during the first six months of his or her life. Figure 29 displays the indicators regarding whether KPC Survey respondents ever breastfed their youngest child, whether they did so for six or more months, and of those who breastfed six or more months, whether that was either predominant or exclusive breastfeeding. Among all mothers interviewed in the 2016 KPC Survey that had a child under two years of age, 84.3% had breastfed their youngest child. Of these, just over three-quarters had initiated breastfeeding within one hour of delivery and 93.5% had begun within 24 hours (Figure 30). The median duration of breastfeeding was six months for all respondents, but was one year in Syrians, IS, 11 months in Syrians, non-IS, and only 3 months in vulnerable Lebanese (see the boxplot in Figure 31).

Breastfeeding for the first two years of life and beyond protects the young child from infection, provides an ideal source of nutrients, is a cost-effective and safe form of feeding, fosters mother-child bonding, and lowers the risks of early childhood deaths. In children not breastfed at all, the risk of early death from diarrhea, respiratory disease, and other common childhood illnesses rises dramatically compared with children who are exclusively breastfed. (Haggerty and Rutstein, 1999, p. 1)

Figure 29 - Respondent's youngest child ever breastfed, breastfed 6+ months, and predominantly or exclusively breastfed for first 6 months, by Strata



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

Figure 30 - Early and later initiation of breastfeeding by respondent for her youngest child 2 years of age or younger

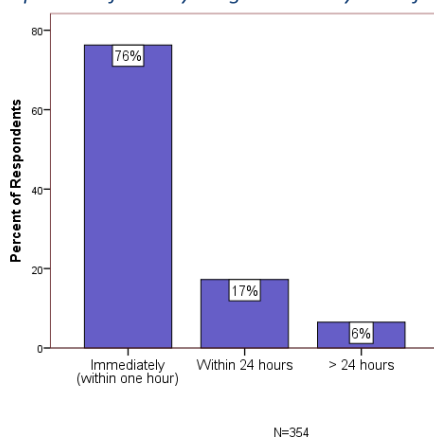
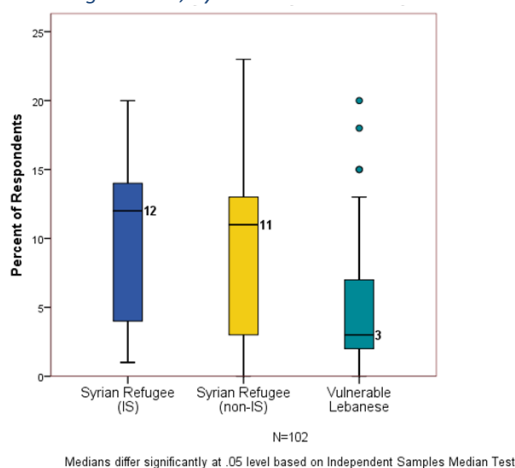


Figure 31 - Boxplot of Number of Months Respondent Breastfed Her Youngest Child, by Strata



Half of all respondents had breastfed their youngest child for at least six months – 62.8% of Syrians, non-IS, 57.8% of Syrians, IS, and 38.4% of vulnerable Lebanese. When looking at the current breastfeeding status by age of respondent's youngest child, as would be expected, the percentage still being breastfed decreased by age group (Figure 32). As this question was only asked of those mothers that were still breastfeeding, the sample size of 102 did not reveal any statistically significant differences between the strata.

Figure 32 - Current breastfeeding, by age of child in months and Strata

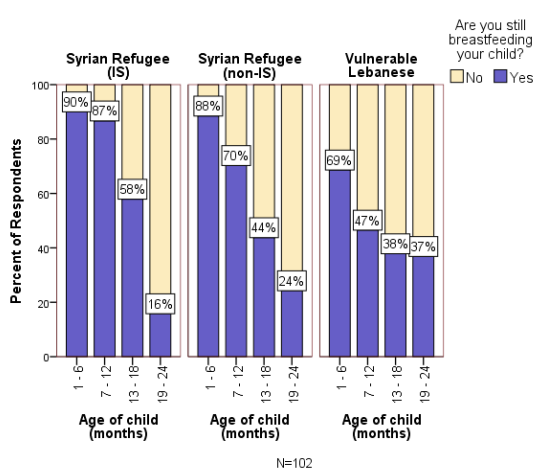
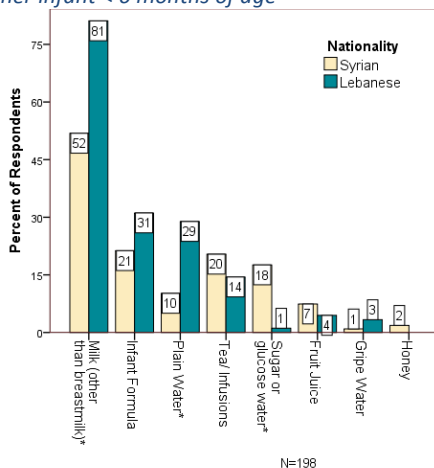


Figure 33 - Fluids other than breastmilk given by the respondent to her infant < 6 months of age



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

Just over half (53.5%) of all respondents had given their breastfeeding infant something other than breastmilk to drink in the first six months after delivery. This rate was highest (60.9%) among Syrians, non-IS and lowest among Syrians, IS (41.1%). Figure 34 shows fluids given, by nationality. There was a significantly higher percentage of Lebanese than Syrians giving milk other than breastmilk (81% vs. 52%), as well as plain water (29% vs. 10%), whereas Syrians were 18 times more likely to give sugar or glucose water (18% vs. 1%) than Lebanese. Respondents of both nationalities were equally likely to give infant formula, tea/infusions, fruit juice, and gripe water.

Just one-third of all respondents had predominantly breastfed their youngest child for the first six months after delivery, with Lebanese the least likely (28%) compared to Syrians, non-IS (36.6%) and Syrians, IS (44.6%). Exclusive breastfeeding for six months is a computed variable in the dataset, and the equation is listed in Annex B. It was calculated based on respondents that breastfed their youngest child under two years of age for at least six months, and gave him or her nothing to drink other than breastmilk in the first six months after delivery.

"Breast milk alone is the ideal nourishment for infants for the first six months of life, providing all of the nutrients, including vitamins and minerals, an infant needs, which means that no other liquid or food is required. Exclusive breastfeeding (up to six months) confers many benefits to the infant. Chief among these is the protective effect against gastrointestinal infections... The risk of mortality due to diarrhea and other infections can increase many-fold in infants who are either partially breastfed or not breastfed at all."
 (Countdown to 2015 and Health Metrics Network, 2011, p. 35)

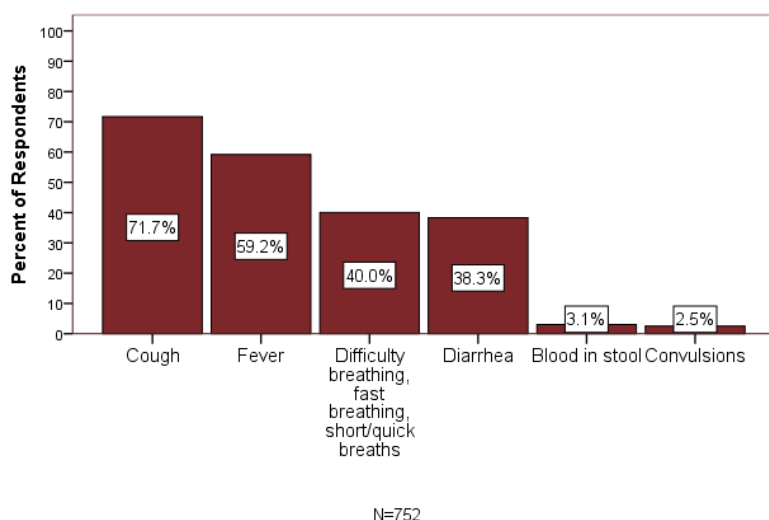
The Multiple Indicator Cluster Survey (MICS2) conducted in Lebanon in 2000 revealed that the Bekaa governorate had the lowest exclusive breastfeeding rate (12.9%) of any region in the country (UNICEF, 2001). In the 2016 KPC Survey, the total rate for all respondents was 27.6%, without significant differences by strata. By district, Baalbek had the lowest rate (17.8%), followed by West Bekaa and Rachaya (23.8%) and Zahle (32.9%). These all fall short of the 2025 WHO Global Nutrition target for 50% of infants from 0 – 6months66 of age to be exclusively breastfed (WHO, 2014).

When the one-sixth of respondents that did not breastfeed were asked why not, nearly three-quarters (72.5%) reported having breast health problems, including insufficient milk production. Only 7.2% said that their other personal health problems (respondents listed illness, Hepatitis, hypertension, and blood clots in legs) had prevented them from breastfeeding. Six percent said they didn't have time to breastfeed and 4% said that their infant was staying in an incubator at the hospital. Another 4% preferred formula, 3% said their infant was unable to breastfeed, while one respondent said that the baby's health problems (illness) prevented him/her from breastfeeding and one respondent was pregnant again and said this did not allow her to breastfeed.

Prevalence of Child Illness

The MICS2 Survey conducted in Lebanon in 2000 revealed that the Bekaa governorate had the highest prevalence of diarrhea (23%) of any region in the country (UNICEF, 2001). A decade and a half later, when 2016 KPC Survey respondents were asked about diarrhea in children < 5 in their households in the last two weeks, a much higher percentage, 39.2%, said that one of their children had experienced symptoms of diarrhea or blood in the stool. This rate was highest among Syrians living in informal settlements (48.4%), followed by Syrians, non-IS (40.3%), and among vulnerable Lebanese (35.6%). The percentages of respondents reporting symptoms of fever (60%) and of suspected pneumonia (75%) were both higher than this (Figure 34). Fever was more reported by residents of Baalbek (78.5%) than those living in West Bekaa and Rachaya (72.7%) and Zahle (68.7%).

Figure 34 - Prevalence of illness in respondent's children < 5 in the past two weeks



Signs of Child Illness

Over four-fifths (84.4%) of respondents listed high fever, diarrhea, respiratory and/or flu symptoms as signs that a child under age 5 needs medical attention. Of the symptoms listed by respondents in Table 13, only two differed by nationality. One-fifth of Lebanese but less than one-tenth of Syrians mentioned that a child not eating or drinking indicated a need for treatment, whereas excessive coughing was listed by 35% of Syrians but only 26% of Lebanese. Figure 35 shows the same information graphically, highlighting that fever was the most frequently listed symptom. Decision tree diagrams, Figure 36 and Figure 37, show how the treatment indicators were calculated based on questionnaire items for both diarrheal disease and suspected pneumonia.

Table 13 - Respondent's Knowledge of Signs and Symptoms that Indicate a Child < 5 Needs Treatment

| Sign or Symptom of Child Illness | Number | Percent |
|--------------------------------------|------------|---------|
| High Fever | 540 | 71.8% |
| Looks unwell or not playing normally | 235 | 31.3% |
| Excessive coughing | 228 | 30.3% |
| Diarrhea | 149 | 19.8% |
| Not eating or drinking | 106 | 14.1% |
| Vomiting | 94 | 12.5% |
| Fast or difficult breathing | 87 | 11.6% |
| Lethargic or difficult to wake | 78 | 10.4% |
| Do not know | 16 | 2.1% |
| Abdominal pain/illness | 7 | 0.9% |
| Convulsions | 6 | 0.8% |
| Pain (any source) | 6 | 0.8% |
| Urinary tract issues | 3 | 0.4% |
| Sore throat/tonsillitis | 3 | 0.4% |
| Inflammation | 2 | 0.3% |
| Earaches | 2 | 0.3% |
| Sensitivity/allergies | 2 | 0.3% |
| Anemia | 1 | 0.1% |
| Nose bleeding | 1 | 0.1% |
| Chickenpox | 1 | 0.1% |
| Flu symptoms | 1 | 0.1% |
| Headaches | 1 | 0.1% |
| Acne/skin problems | 1 | 0.1% |
| Total Number of Respondents | 752 | |

Figure 35 - Respondent's Knowledge of Signs and Symptoms that Indicate a Child < 5 Needs Treatment

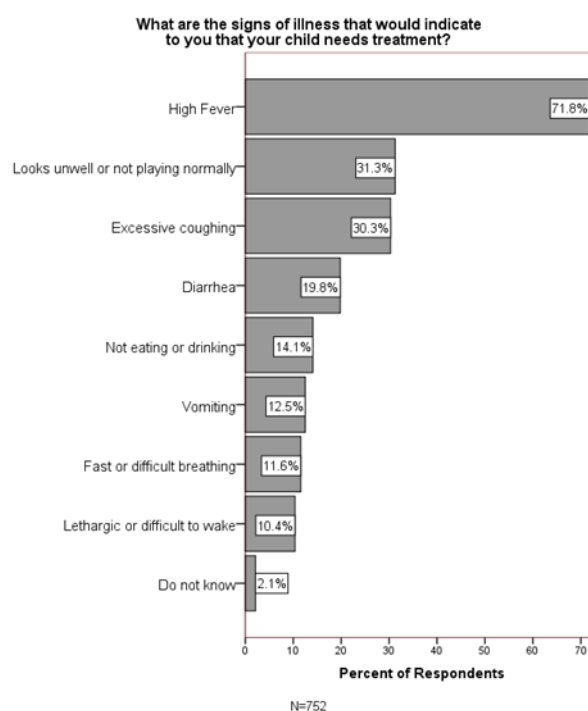


Figure 36 - Decision Tree for Child < 5 Diarrhea Treatment Questions and Indicator Calculation

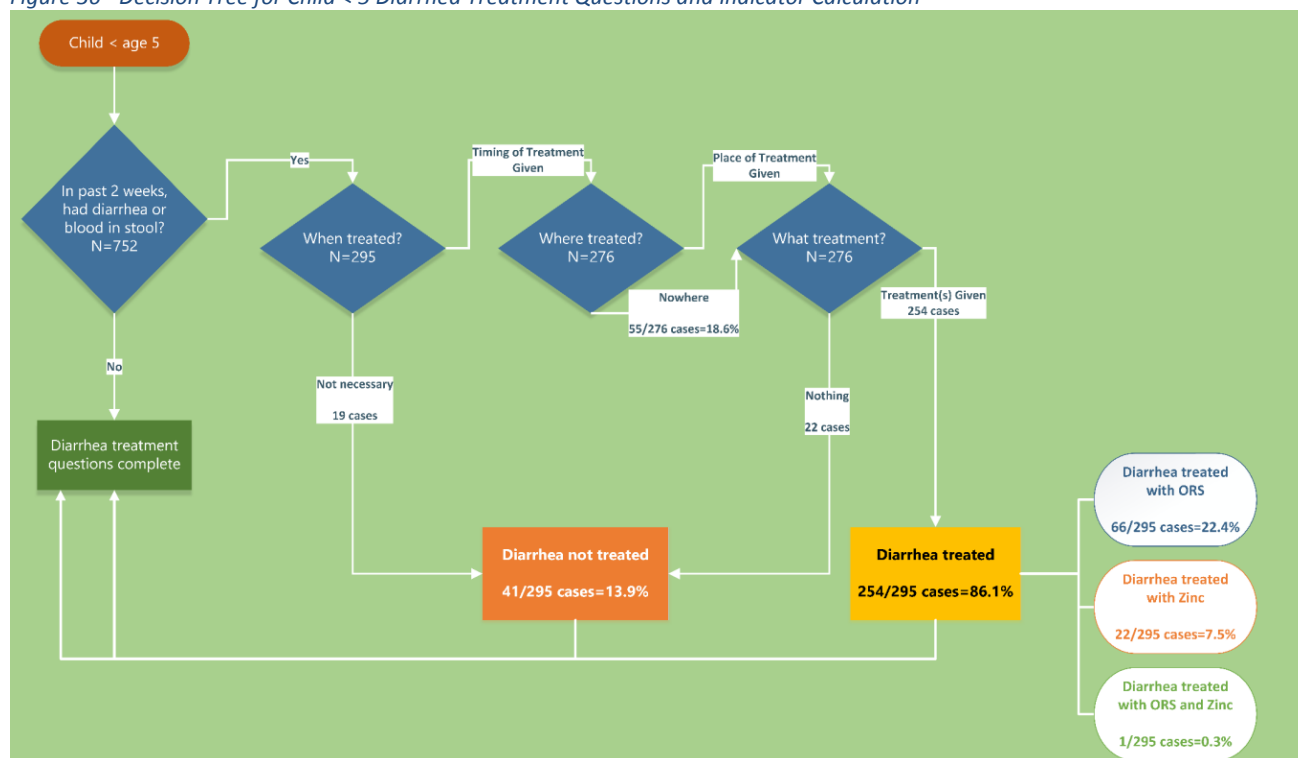


Figure 37 - Decision Tree for Child < 5 Suspected Pneumonia Treatment Questions and Indicator Calculation

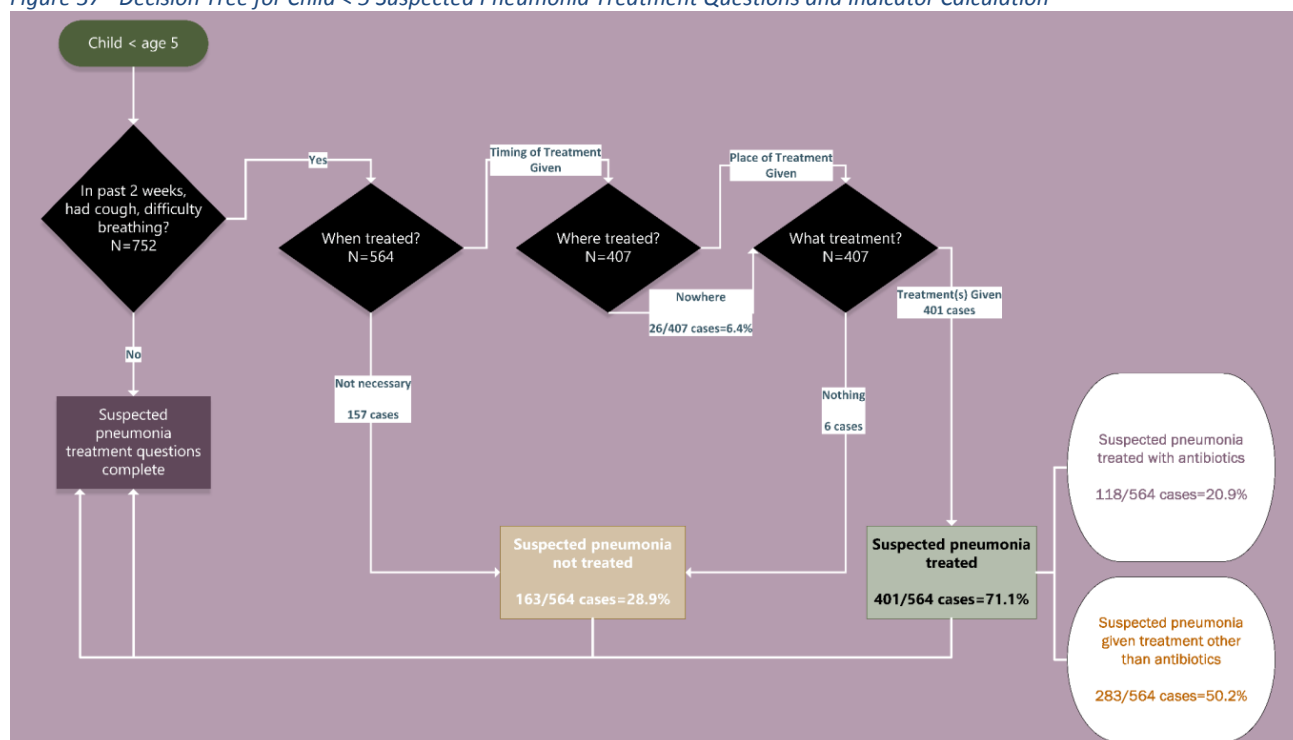
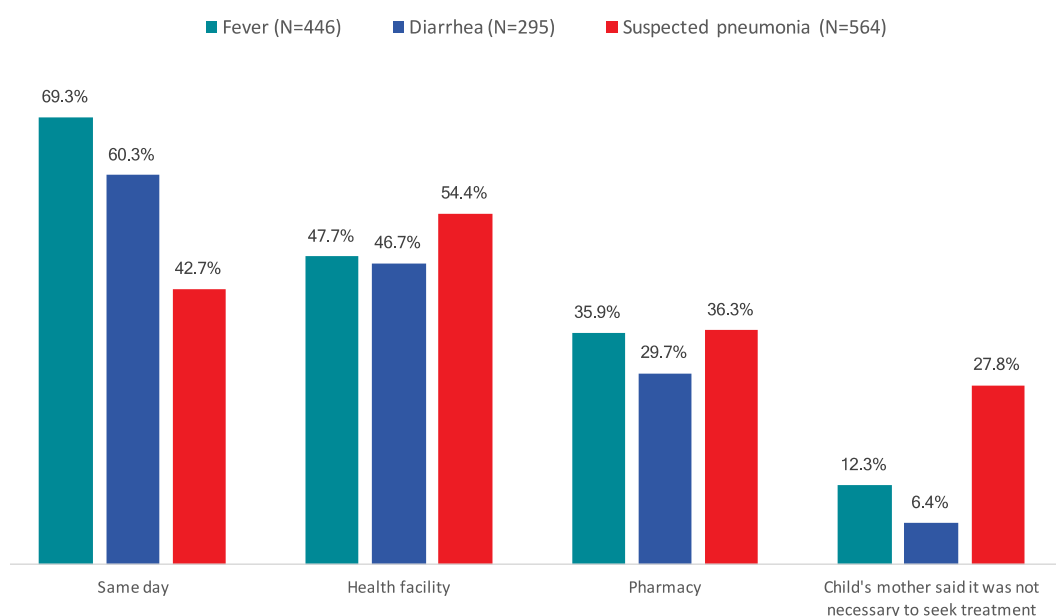


Figure 38 compares the treatment-seeking behavior indicators of mothers for fever, diarrhea and suspected pneumonia in their child or children <5 that had these symptoms within the past two weeks. Fever was the most likely symptom to prompt same-day treatment (69.3% vs. 60.3% for diarrhea and 42.7% for acute respiratory illness). ARI, also termed suspected pneumonia, cases were the most likely to be taken to a health facility (54.4% vs. 47-48%), but were also the cases for whom the most mothers did not think it was necessary to seek any advice or treatment (27.8% compared to 12.3% for fever and 6.4% for diarrhea).

Figure 38 - Treatment-seeking behavior of respondents for symptoms of illness in their child < 5, by time and place



Fever

Of the approximately three-fifths of respondents that reported fever in a child under 5 in the previous two weeks, 69.3% sought treatment the same day they noticed the fever (Figure 39). Seventy-eight percent of mothers living in Baalbek (where the prevalence was also higher) and two-thirds of those residing in the other districts gave treatment as depicted in Figure 40. Of mothers that noticed recent fever in her child under age five, 47.7% first took the child to a health facility, 35.9% sought treatment at a pharmacy, while one-eighth did not seek treatment outside the home. Seeking treatment for a child's fever first at a pharmacy was more likely in Baalbek (43.7%) than in Zahle (36.6%) and West Bekaa and Rachaya (22.9%). Not seeking fever treatment outside

the home was most common in West Bekaa and Rachaya (21.7%) compared to about one-tenth of mothers in the other two districts. Fewer than 5% of all respondents reported going to friends/relatives for advice, or to a traditional practitioner or community distributor when her child had a fever (Figure 41), Figure 38 with Syrians, non-IS the most likely group (5% vs. 1% in the other two strata) to go to friends and relatives.

Figure 39 - Timing of treatment-seeking for fever in the respondent's child < 5

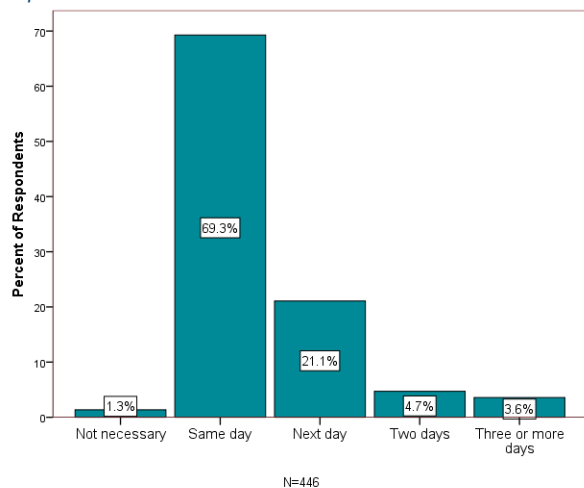
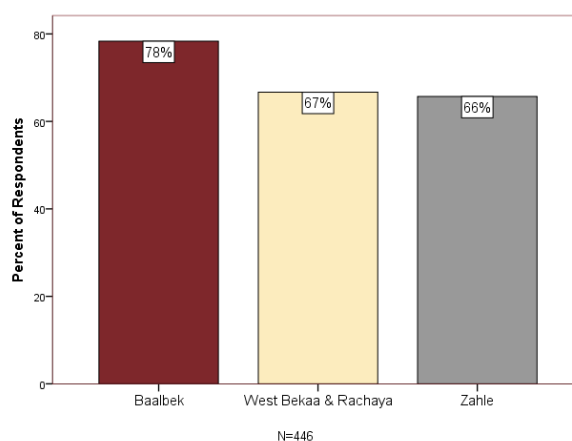
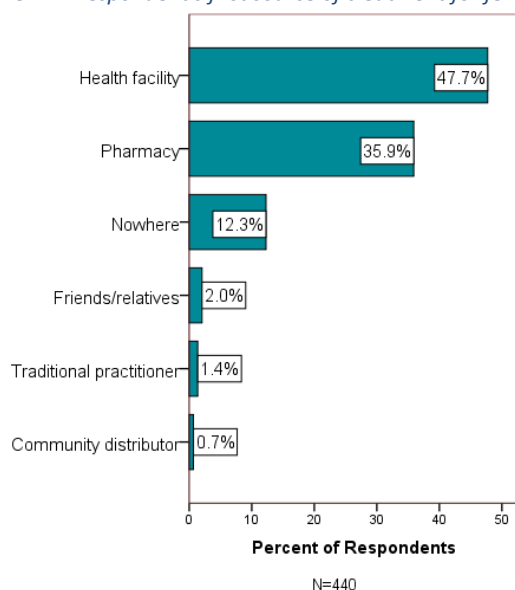


Figure 40 - Same day treatment-seeking for fever in child <5, by District



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

Figure 41 - Respondent's first source of treatment for fever in child <5



Diarrhea

Berhe, et al (2016, p. 32) define acute diarrhea as “the experience of three or more watery stools, with or without blood, in a 24-hour period.” While there are many causes, not the least of which is a contaminated water supply, the peak prevalence of child diarrhea at 6 – 11 months has been associated with the introduction of contaminated weaning foods, the risk of ingesting contaminated materials once crawling has initiated (Ibid., p. 35), and the teething period (UNICEF, 2007, p. 35) when unwashed fingers and objects may be put into the child’s mouth.

While some may view the health benefits of daily home hygienic practices to be common knowledge, a 2006 study found that many behavioral issues were related to the incidence of diarrhea in children under five. These included: “irregular handwashing by mothers after going to the toilet, no handwashing by mothers before feeding children, the child having a sibling, unsafe storage of food for later use, irregular kitchen cleaning, infrequent cleaning/emptying of storage container before refilling it with fresh water, and irregular latrine cleaning, as well as latrine-sharing among more than five people” (Bui, 2006, p. 7). Given that nearly half of Syrians, IS and 40% of all respondents reported an episode of diarrhea and/or bloody stools in young children in their household within the past two weeks, evidence-based practices should be explored to promote correct hygiene among the Medair target population using an educational and persuasive approach. In the 2016 KPC Survey, three-fifths of mothers administered treatment for diarrhea the same day they noticed the symptoms, and nearly a quarter treated the child the following day. Only 6% of mothers said advice or treatment for these symptoms was not necessary (Figure 43).

Figure 42 - Respondent's timing of treatment-seeking for diarrhea in child < 5

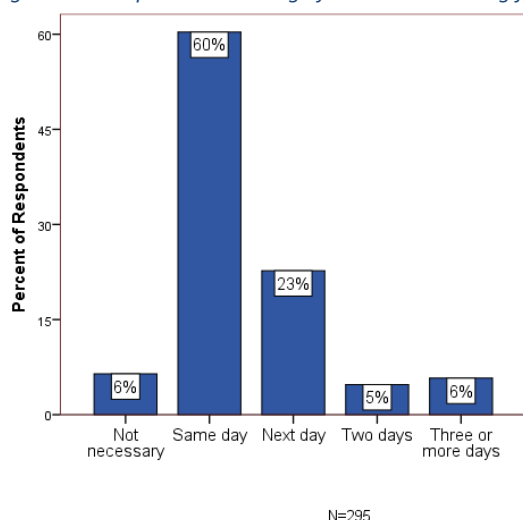
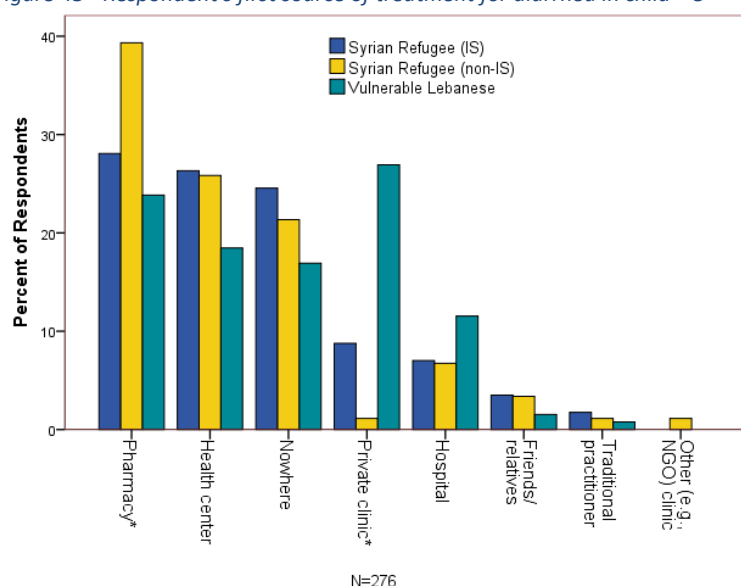


Figure 43 illustrates that Lebanese respondents preferentially went to private clinics as a first source of treatment for their child's diarrhea, whereas Syrians were more likely to go first to a pharmacy or health center. About one-tenth sought care at a hospital, fewer than 5% sought advice from friends/relatives or a traditional practitioner, and one-fifth of all respondents did not seek treatment outside the home. Many that answered "nowhere" in response to this question actually gave treatment at home for diarrhea (based on cross-tabulations), so the correct interpretation may be that these mothers were confident about the treatment they were able to give at home without external advice. A rewording of this response in future surveys could clarify this.

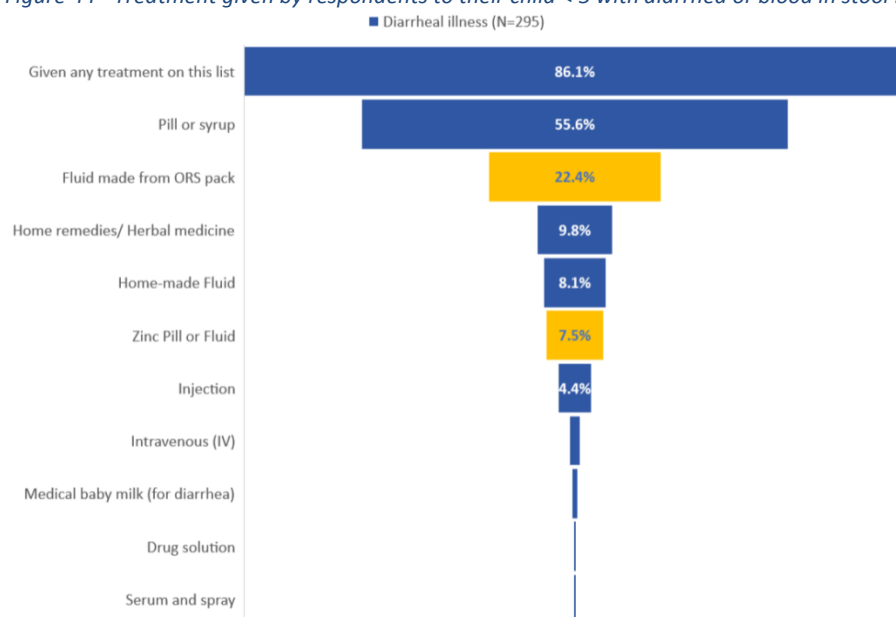
Figure 43 - Respondent's first source of treatment for diarrhea in child < 5



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

Fluids made from an ORS pack and zinc supplementation are the recommended treatment for children under 5 with diarrhea. The 2000 MICS Survey showed that in the Bekaa, half of children under 5 had been treated with ORS during their recent episode of diarrhea and 6% were given no treatment. Among 2016 KPC Survey respondents, only 22.4% of mothers gave ORS, 7.5% gave zinc pill or fluid, and 0.3% gave both ORS and zinc to their child with diarrhea. However, fully 86.1% had given some form of treatment, the most common being pill or syrup (55.6%). One-tenth of respondents administered home remedies or herbal medicine. Fourteen percent gave no treatment, about half of whom didn't seek it and half that did not treat even after seeking advice. The current survey questions did not allow us to elucidate whether the health system failed to give these mothers the proper advice, or if the right advice was given but mothers did not follow it for any reason. Those children represented in the lower section of the funnel graph in Figure 44 were given injections, intravenous medications or a drug solution, which are treatments for dehydration.

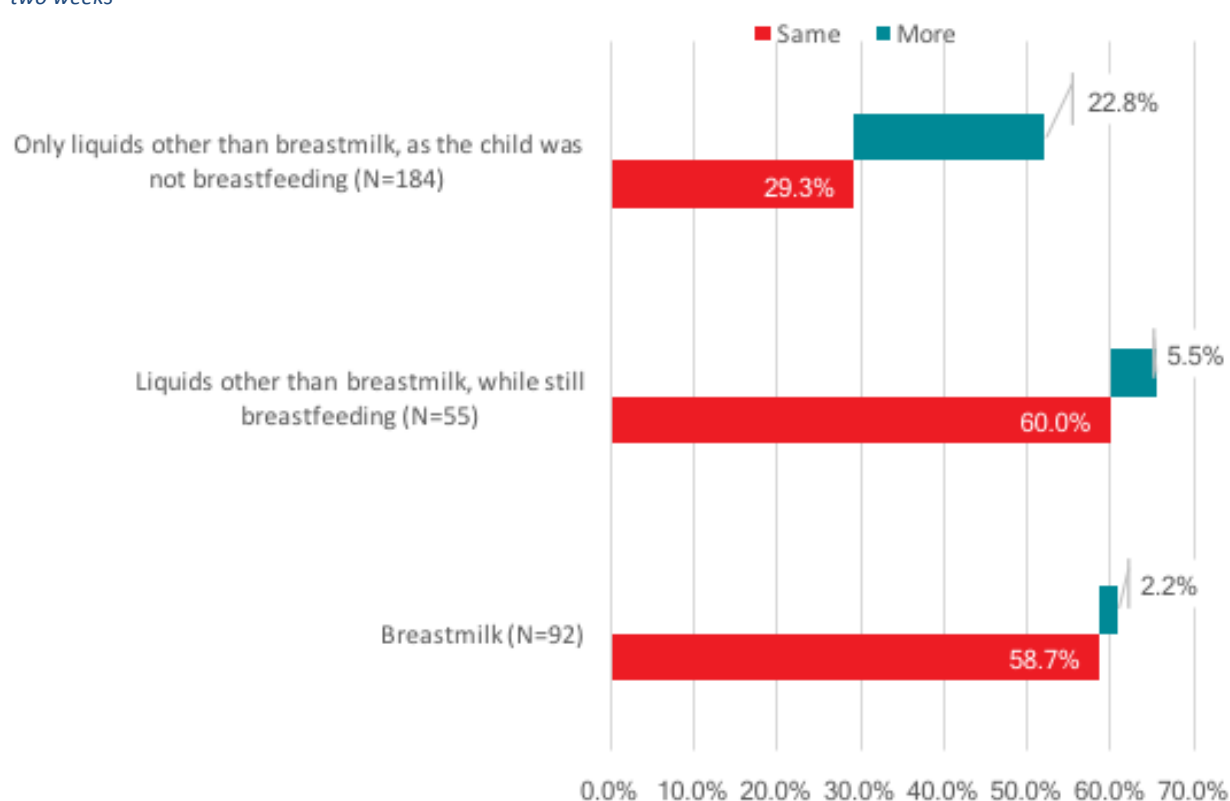
Figure 44 - Treatment given by respondents to their child < 5 with diarrhea or blood in stool in the past two weeks



While the recommended practice is to give more fluids than usual during an episode of diarrhea, the authors of the 2000 MICS Survey report for Lebanon noted that “all studies point to the difficulty of getting an estimate from mothers on the quantity of fluids taken by children during diarrhea.” (UNICEF, 2001, p. 9). Only 22.6% of mothers in the Bekaa (the lowest in the country) gave more liquids than usual during the child’s diarrhea in 2000.

Figure 45 shows that non-breastfeeding mothers were more likely than breastfeeding mothers to give their children with diarrhea more liquids than usual. Overall, 22.8% of these mothers gave more liquids during the diarrheal episode, whereas 5.5% of breastfeeding mothers gave more liquids other than breastmilk and 2.2% gave more breastmilk than usual. As this home health behavior is important to prevent dehydration, additional attention to public education on this topic seems warranted.

Figure 45 - Percent of respondents that gave the same amount or more liquids than usual to their child < 5 with diarrhea in the past two weeks



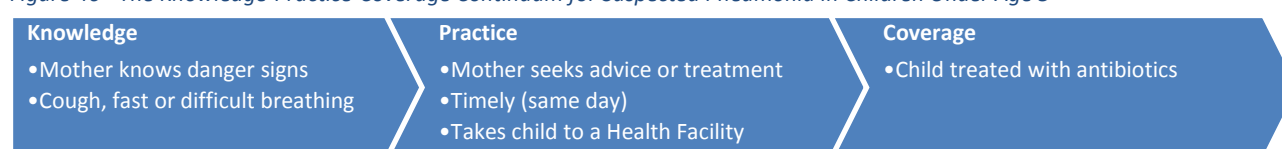
Suspected Pneumonia (Acute Respiratory Illness)

UNICEF defines children with suspected pneumonia as “those who had an illness with a cough accompanied by rapid or difficult breathing and whose symptoms were not due to a problem in the chest and a blocked nose” (UNICEF, 2007, p. 36). Health programs use the nomenclature of suspected pneumonia for these acute respiratory illness (ARI) symptoms in children under 5 to highlight its severity.

“Pneumonia accounts for an estimated 18% of deaths among children under five. Pneumonia prevention and treatment is therefore essential to the achievement of MDG4. Pneumonia is closely associated with under-nutrition and poor home environments that leave children more exposed to disease-causing pathogens, which means that pneumonia deaths are highly concentrated in the world’s poorest settings. A key intervention for controlling pneumonia in children is prompt treatment with a full course of appropriate antibiotics. Effective case management at the community and health facility levels is needed to ensure that sick children receive appropriate treatment.” (Countdown to 2015 and Health Metrics Network, 2011, p. 39)

Similar to those that could be drawn for other child illnesses, Figure 463 reflects the knowledge, practice and coverage actions and indicators relevant to suspected pneumonia in children <5.

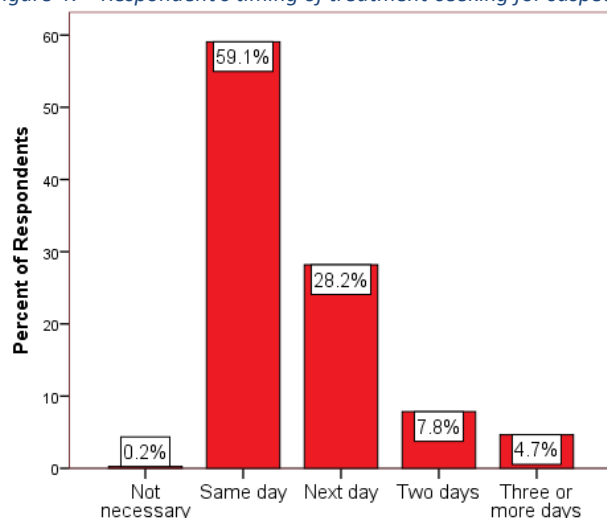
Figure 46 - The Knowledge-Practice-Coverage Continuum for Suspected Pneumonia in Children Under Age 5



First, mother or caretaker should recognize that excessive cough, fast or difficult breathing with quick, short breaths are a danger sign. Next, she should seek advice or treatment in a timely manner from a health facility where the child can be examined by a skilled clinician. If there is a diagnosis and prescription for antibiotics and/or other medications, then the child should be treated with them following the prescribed regimen.

Across all strata and districts, nearly three-quarters of mothers with a child that had suspected pneumonia pneumonia pneumonia symptoms thought that some form of advice or treatment was necessary and sought it. Forty-three percent of mothers sought treatment the same day they noticed the symptoms of coughing, difficulty and/or fast breathing, with the highest percentage in Baalbek (50%), followed by Zahle (43%) and West Bekaa and Rachaya (32%).

Figure 47 - Respondent's timing of treatment-seeking for suspected pneumonia in child < 5



N=408

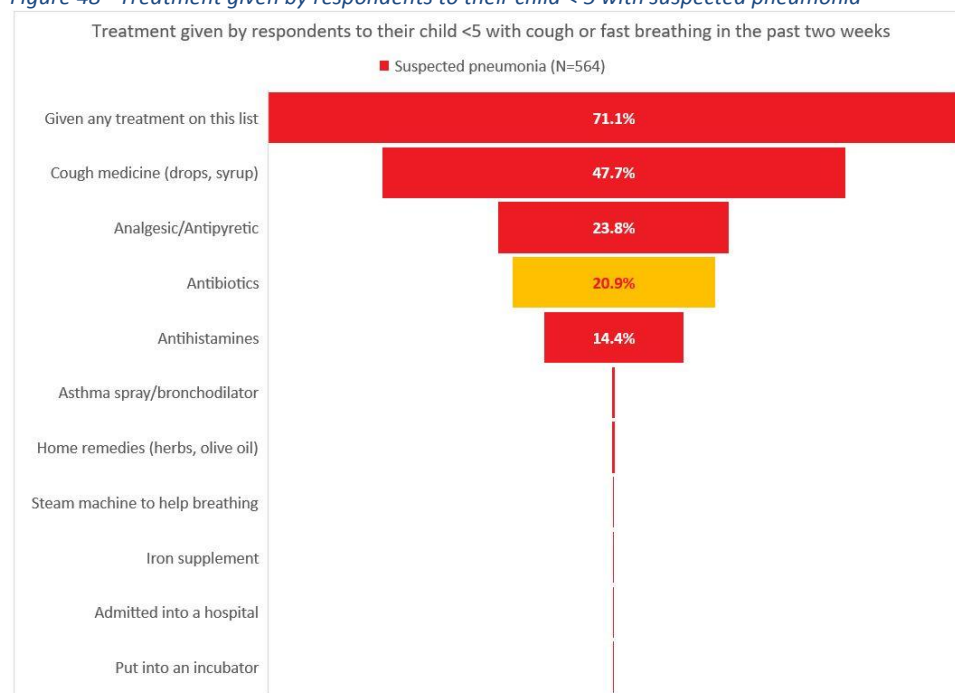
The 2000 Lebanon MICS Survey showed that nationally, nearly three-quarters of children with ARI symptoms were treated at a clinic or health center and that only 3.5% were taken to a pharmacy. The figures for the Bekaa were lower than those for all other regions, with 61% going to an appropriate provider (UNICEF, 2001).

Fifteen years later, in the 2016 KPC Survey, only 54.5% of mothers first sought advice or treatment from a health facility for cough or fast breathing in their child <5, while 36.4% first went to a pharmacy, and 6.4% did not go outside of their home to seek treatment. Vulnerable Lebanese mothers (62.4%) were the most likely to go first to a health facility, followed by Syrians, IS (55.4%)

and Syrians, non-IS (40.3%). Going to a pharmacy first was higher than average among Syrians, non-IS (51.6%) and residents from Baalbek (41%) and Zahle (40%). Mothers residing in West Bekaa and Rachaya (13.6%) were the most likely not to go outside of their homes to seek ARI advice or treatment compared to those in Baalbek (6.3%) and Zahle (4.5%).

Figure 48 shows that 71.1% of children with ARI symptoms -- suspected pneumonia -- were treated and one fifth of symptomatic children received antibiotics. More vulnerable Lebanese (26.2%) than Syrian, IS (15.1%) and Syrian, non-IS (15.7%) mothers had given their children antibiotics. The most common treatment was cough medicine, used by nearly half of respondents, followed by analgesics or antipyretics which were used by nearly one-quarter of mothers. Fourteen percent gave their children antihistamines. A few children were given only home remedies while a few others had more intensive treatment, including hospital inpatient management. Over one-quarter (28.9%) of mothers gave their child with ARI symptoms no form of treatment, mostly because they did not seek treatment (157 cases) rather than not treating once they sought advice (6 cases). Like in the diarrhea section above, the current survey questions did not reveal the advice given to the mothers of children with ARI/suspected pneumonia, so the 6 cases may not have warranted treatment, or there could have been a prescription that mothers did not fill or administer to their child.

Figure 48 - Treatment given by respondents to their child < 5 with suspected pneumonia



Vaccinations

Immunization coverage was calculated for all vaccines in the Lebanese National Vaccination Schedule (see Table 14). Vaccination is provided free of charge to children living in Lebanon (Table 3).

Household surveys collect information on the vaccination status of children by asking the mother to provide the child's health card and copying the vaccination dates from the card. If there is no card, mothers are asked to recall the vaccinations given to their child. The quality of household survey data on DTP3 depends on the sample design and how successful interviewers are in obtaining information directly from the child health cards. Out of 160 DHS conducted in the past two decades, 12% of surveys obtained less than half of the DTP3 coverage data from the child health cards; 31% of surveys between 50% and 75% of information from the cards; and in 57% of surveys, the card was seen for at least 75% of the children. (Countdown to 2015 and Health Metrics Network, 2011, p. 38)

The MICS2 in Lebanon in 2000 (UNICEF, 2001) found that 83% of children had a vaccination card but enumerators could use them for data collection for only 57% of children (44% of those in the Bekaa). In the 2016 KPC Survey, vaccination cards were requested from mothers of children < 5 for their youngest child at least one year of age. Vaccination cards were available for 65.3% of the vulnerable Lebanese sample and 47% of the Syrian (IS and non-IS) households (Figure 49). About half (46.8%) of the mothers that did not have a vaccination card for their child said it was because the child had not been vaccinated. About a quarter gave no reason, an eighth said the card was in Syria, and a tenth stated that it was lost or damaged. Only 5.5% said they had not been given one by the health facility where the child had been vaccinated – and, only 1 percent of all respondents said that their child was not registered and that this was the reason he/she had no vaccination card (Figure 50).

Figure 49 - Vaccination card available and enumerator allowed to copy data from it for coverage statistics, by Strata

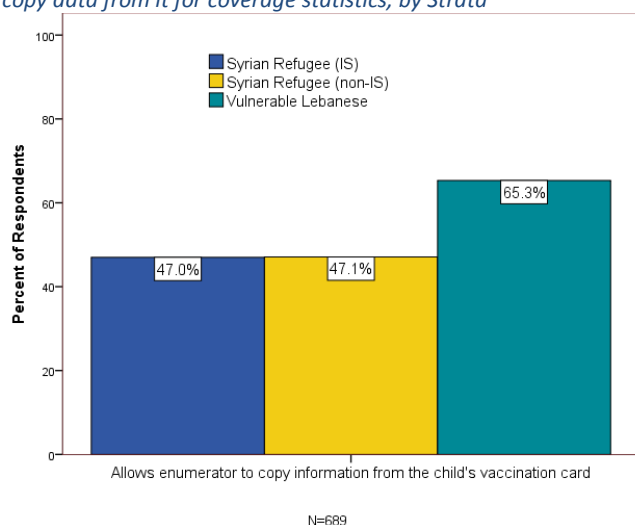


Figure 50 -Reason why respondent does not have a vaccination card for her child < 5

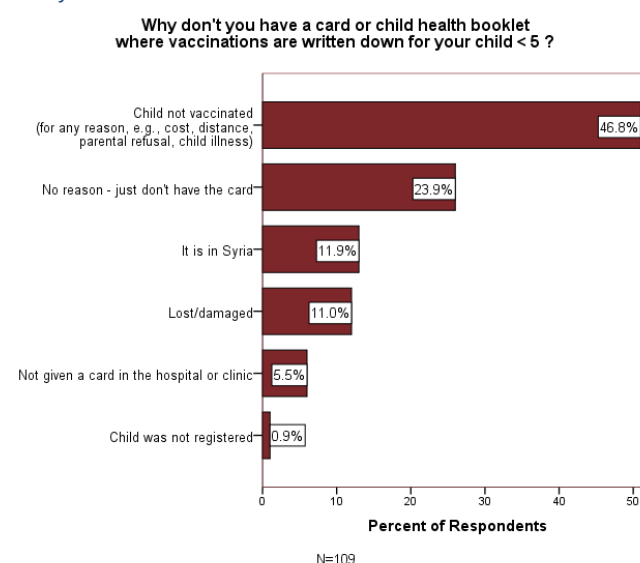


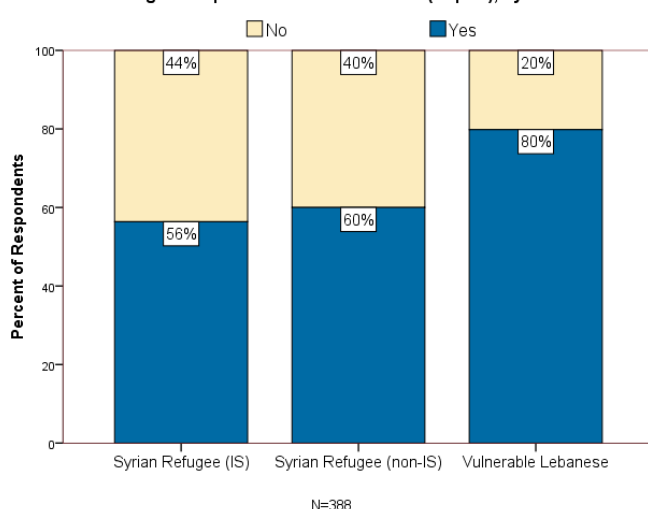
Table 14 - Lebanese National Vaccination Schedule

| TIMEFRAME | VACCINE |
|-----------|--|
| AT BIRTH | Hepatitis B |
| 2 MONTHS | Polio 1 (IPV) Pentavalent 1 (DPT-Hepatitis B-Hib) |
| 4 MONTHS | Polio 2 (OPV) Pentavalent 2 |
| 6 MONTHS | Polio 3 (OPV) Pentavalent 3 |
| 9 MONTHS | Measles (zero dose) |
| 12 MONTHS | MMR (first dose) |

The coverage of individual vaccinations and of full immunization according to the national schedule was in general higher among vulnerable Lebanese than among Syrian refugees and when Medair observed statistically significant differences geographically, households in Baalbek had a higher child immunization coverage rate than those in Zahle, West Bekaa and Rachaya districts. The first vaccine in the national schedule is Hepatitis B1, given at birth, and coverage was 71.1% with no significant geographic variation. While 80% of Lebanese received this vaccine, 60% of Syrians, non-IS and 56% of Syrians, IS were immunized for Hepatitis B at that time.

Figure 51 - Coverage of Hepatitis B Vaccine at Birth, by Strata

Coverage of Hepatitis B1 Vaccine at Birth (HepB1), by Strata

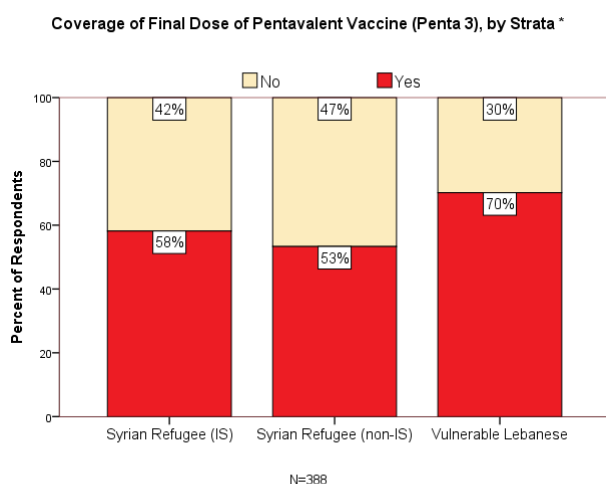


* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

The immunization coverage indicator in the WHO 100 Core Health Indicators list (Annex B), calls for the coverage of the last dose of each vaccine in the national schedule.

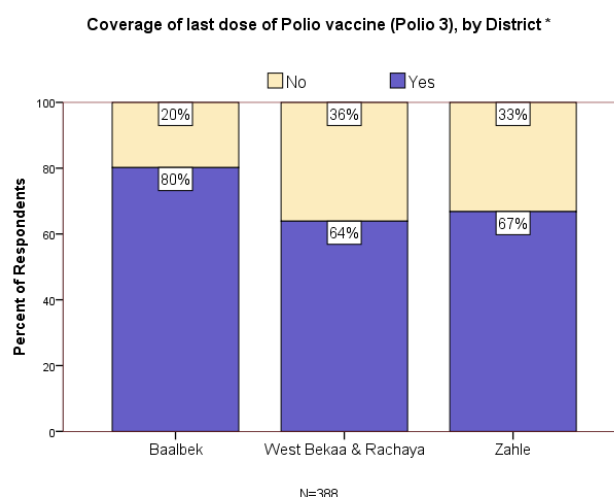
Both the Polio 3 and Penta 3 vaccines should be given at 6 months, and the vaccination cards were reviewed only for children at least 12 months of age, so even those that received either vaccination up to six months late would have been observed as vaccinated by the KPC Survey. Figure 5249 reveals that of those with cards available to review, 70% of Lebanese had received the Penta 3 vaccine, but only 58% of Syrian, IS and 53% of Syrian, non-IS children were covered. Of those with cards to reviewreviewreview, 63.9% of children received the Penta 3 vaccine, with no differences by district. Polio 3 coverage was 70%, with no difference by strata. Eighty percent of children in Baalbek households had been immunized compared to about two-thirds in Zahle, West Bekaa and Rachaya (Figure 53).

Figure 52 - Coverage of Last Dose of Penta Vaccine, by Strata



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

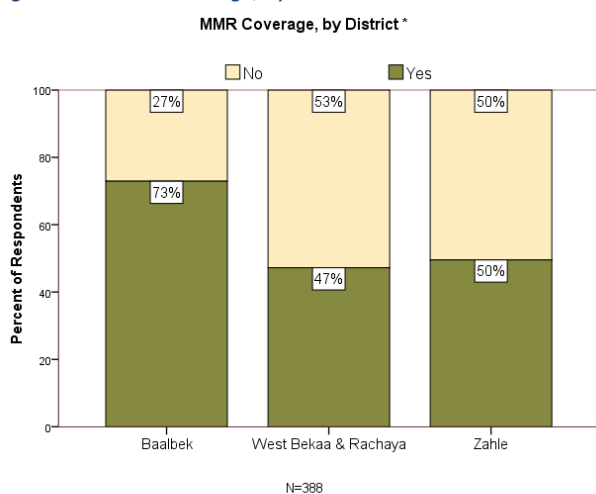
Figure 53 - Coverage of Last Dose of Polio vaccine, by District



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

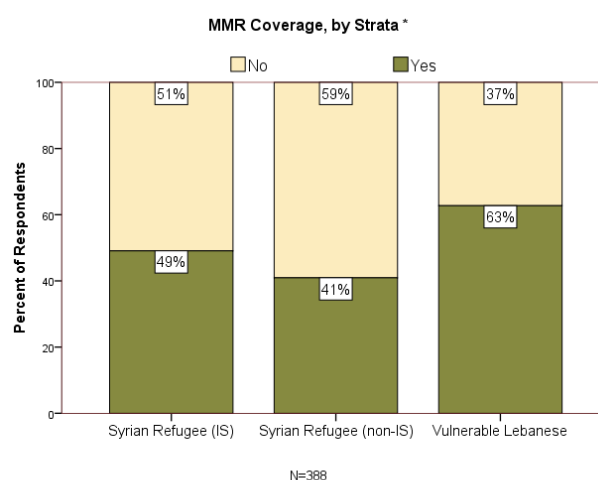
Because MMR is scheduled at 12 months of age, this is the individual vaccine most likely to have been missed given that cards were reviewed for children at least 12 months of age. The coverage rate among the children whose vaccination cards were reviewed was 54.9%. As shown in Figure 54 and Figure 55 again the Lebanese and households in Baalbek had higher coverage than their counterparts. Nearly half of vulnerable Lebanese children were fully immunized, compared to about one-third of Syrian refugee children. Full immunization coverage was seen in over half (54%) of children whose cards were examined in Baalbek, while it was 36% in West Bekaa and Rachaya and 37% in Zahle.

Figure 54 - MMR Coverage, by District



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

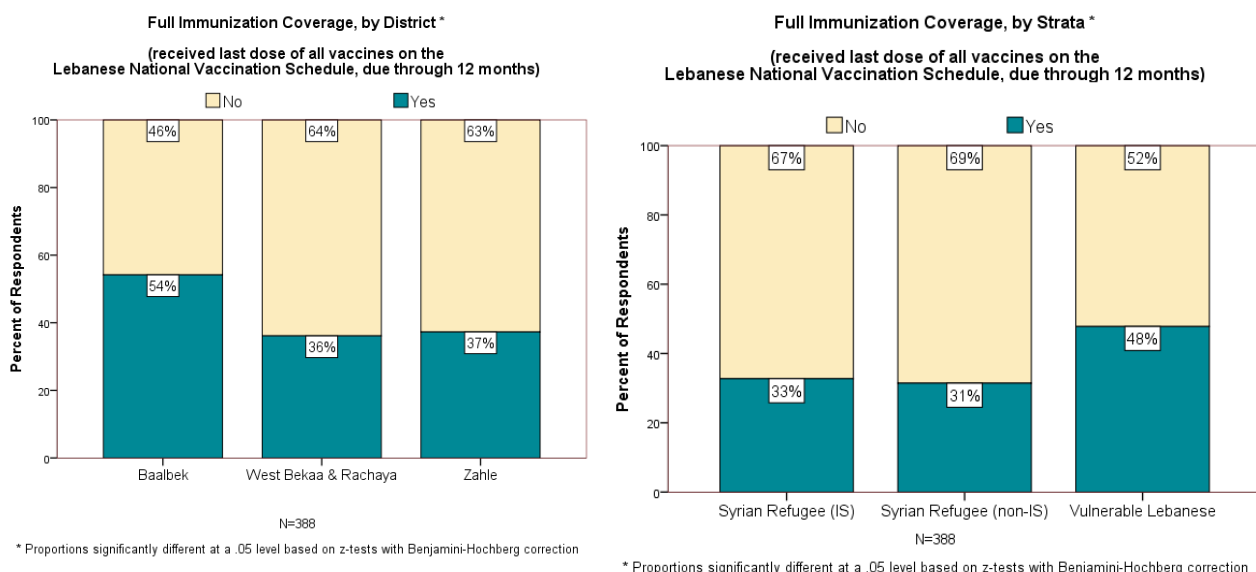
Figure 55 - MMR Coverage, by Strata



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

The coverage rate among the children whose vaccination cards were reviewed for measles was 69.8%. By combining card and recall data, and including both measles and MMR vaccination, the measles vaccination coverage rate was 71.0%.

Figure 56 - Full Immunization Coverage, by District and Strata



MICS2 (2000) vaccination card data showed a 92.6% DPT/polio immunization and 82.6% MMR coverage nationally. The Bekaa – and in particular Baalbek district – had some of the lowest immunization coverage rates in the country. The Bekaa had the highest rate (8.1%) of never vaccinated children. In the Bekaa in 2000, DPT/OPV3 coverage was 87.7%, and M/MMR was 81.4%. The 2016 KPC Survey tracks Pentavalent vaccination, or DPT-Hepatitis B-Hib. The 2016 KPC Survey Penta 3 rate of 63.9%, Polio 3 rate of 69.6%, and MMR rate of 54.9% are all lower than national and Bekaa regional rates observed in the MICS2 over fifteen years ago. This is not likely indicative of an overall trend in lower coverage as the MOPH has since published DPT3 rates nationally of higher than 95%, so it may be a health equity issue with these specific subpopulations. There is also the consideration that the sample statistics from this survey are based on the subset of mothers than could produce their child's vaccination card.

Box 1 - WHO Framework for Using Immunization Coverage as an Indicator of Child Health Service Availability, Accessibility and Utilization (Source: WHO, 2002)

- Penta 1 coverage indicates availability of access to and initial use of immunization services by children.
- Penta 3 coverage indicates continuity of use by parents, client satisfaction with services and capability of the system to deliver a series of vaccinations.
- Measles coverage indicates protection against a disease of major public-health importance.
- Penta 1 to Penta 3 dropout rates indicate the quality of services as perceived by parents and the quality of communication between parents and health workers.

Medair Lebanon used a World Health Organization framework (Box 1), which has also been adapted by MEASURE Evaluation, to further examine its immunization coverage rates (WHO, 2002). Based on this framework, Table 15 shows the problem categories of the 2016 KPC Survey strata and districts, based on their Penta 1 coverage and Penta 1 – Penta 3 dropout rates.

Table 15 - Immunization Utilization and Access by Strata and District based on Coverage and Dropout Rates

| Status | Parameters | 2016 KPC Results by Strata | 2016 KPC Results by District |
|----------------------|---|--|--|
| 1: No problem | Drop-out rates < 10% = good utilization Penta 1 coverage >=80% = good access | | |
| 2: Problem | Drop-out rates >=10% = poor utilization Penta 1 coverage >=80% = good access | <ul style="list-style-type: none"> ▪ Vulnerable Lebanese | <ul style="list-style-type: none"> ▪ Baalbek ▪ West Bekaa & Rachaya ▪ Zahle |
| 3: Problem | Drop-out rates < 10% = good utilization Penta 1 coverage < 80% = poor access | | |
| 4: Problem | Drop-out rates >=10% = poor utilization Penta 1 coverage < 80% = poor access | <ul style="list-style-type: none"> ▪ Syrians, IS ▪ Syrians, non-IS | |

This categorization reinforces that there is a health equity problem in that the two Syrian strata are shown to have both poor initial access to the vaccination system as well as poor ongoing utilization over time. Those that had relatively good access to Penta 1 – the vulnerable Lebanese and all districts in the survey – still had problems with utilization over time. The WHO framework calls for additional root cause analysis based on this categorization, and this is one of the recommendations stemming from this report.

Disability in Children Under Age Five

Among the 754 women interviewed, 29 mothers (3.8%) reported having a child under 5 years of age with a disability in her home. These 29 mothers reported that 31 (2.6%) of their collective 1,185 children under age 5 had a disability. Table 16 lists the definitions of each of the six types of disability reported by these parents, and Table 17 lists number of children that had each type or a combination of disabilities. The most common type of disability in young children reported in this survey is mobility, followed by cognition, seeing and hearing, and finally communication and self-care. In addition to the 27 children with one disability each, three children were reported to have two disabilities each and one child is living with three disabilities. Currently in Lebanon, *specialized NGOs provide people with disabilities with specialized services such as physical therapy, rehabilitative support such as prosthetic and orthotic devices, hearing aids and eye glasses for vision correction (2017-2020 LCRP, p. 96).*

The prevalence of disabilities shown here should be used to inform those NGOs as well as PHCCs and SDCs regarding the proper referral system for parents needing services for disabled children.

Table 16 - Definitions of the Six Types of Disability Measured in 2016 KPC Survey

| Type of Disability | Definition |
|--------------------|---|
| Mobility | Orthopedic impairment, difficulty walking or climbing steps |
| Cognition | Intellectual disability, emotional disturbance, learning disability |
| Seeing | Visual impairment (including blindness) |
| Hearing | Hearing impairment (including deafness) |
| Communication | Speech or language impairment |
| Self-care | Difficulty washing all over or dressing |

Table 17 - Prevalence of Disability in Respondents' Children < 5, by Type

| Disabilities in Family Members < 5 | Number of Children < 5 |
|--|------------------------|
| Communication | 1 |
| Cognition | 6 |
| Mobility | 14 |
| Communication and Mobility | 1 |
| Mobility and Self Care | 1 |
| Cognition and Mobility | 1 |
| Cognition, Communication, and Mobility | 1 |
| Hearing | 3 |
| Seeing | 3 |
| Total | 31 |

Reproductive Health

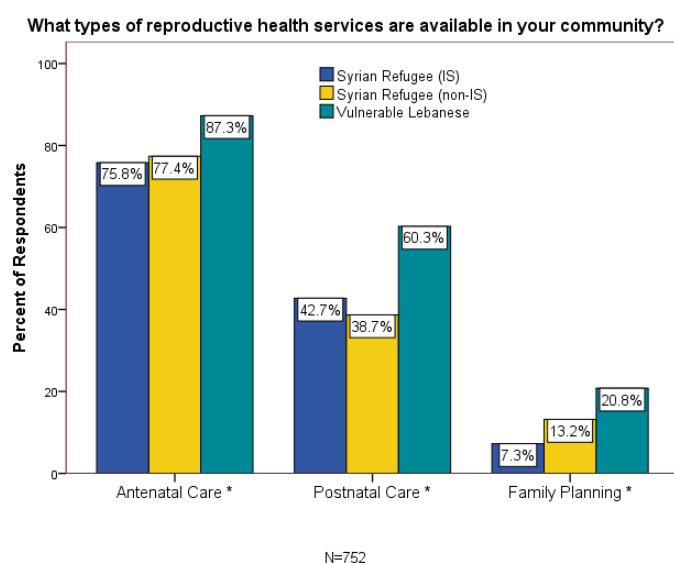
Table 3 at the beginning of this report on page 17 shows the prices for reproductive health care available to Syrians in the Bekaa Region through Lebanon Crisis Response Plan (LCRP) partners. Family planning, antenatal care and postnatal care services are largely provided at SDC clinics and MOPH PHCCs, both of which are supported by LCRP NGO partner organizations. Delivery care is provided by contracted hospitals. Vulnerable Lebanese either access these services at the same rates or slightly higher nominal fees offered by the MOPH and MoSA system. UNHCR data was recently cited in the press in Lebanon, stating that 40% of its global medical expenditures in 2015 had gone to pregnancy and childbirth services (Marsi, 2017). In Lebanon, the humanitarian sector pays for the majority of reproductive health care expenses to lessen the out-of-pocket expense to the refugee population, while encouraging them to seek care from skilled providers at appropriate health facilities when needed. When fertility is moderate to high, this can be a major ongoing expense.

There are two sets of questions on reproductive health (RH) services received by respondents in the KPC Survey. One set is regarding RH services received by respondents within the six months prior to the survey, and the other set is regarding the RH services related to the birth of the respondent's youngest child. Before being asked these sets of questions, women were asked about their awareness of and access to RH services in their communities. RH services include family planning/child spacing, antenatal care, delivery, and postnatal care.

Access to Quality Reproductive Health Services

Lebanese respondents were more informed about the availability of ANC, PNC and FP services in the Bekaa governorate than Syrians (Figure 57). Over three quarters of women in all strata know that ANC services were available locally, but only a fifth of Lebanese and less than 15% of Syrians knew that FP services were available. Sixty percent of Lebanese and 40% of Syrians reported being aware that PNC was offered in their community. When asked where someone could get these services locally, 53% of respondents said at a private clinic, 24% a health center, 16% listed SDC clinics, and 16% hospitals (Figure 58).

Figure 57 - Respondent's Knowledge of Locally Available Reproductive Health Services, by Type and Strata



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

Figure 58 - Respondent's Knowledge of Where to Access RH Services in her Community

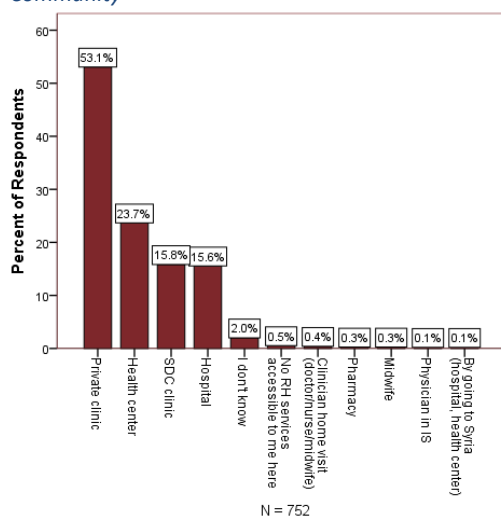
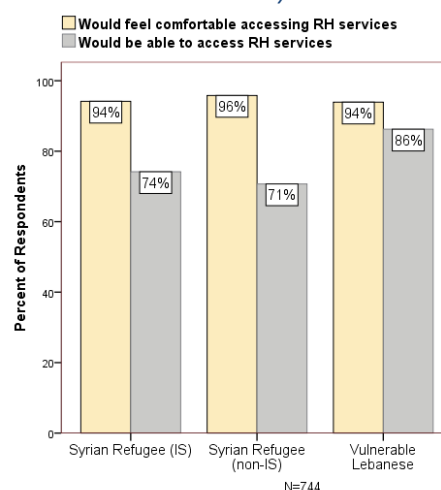


Figure 59 - Respondent's Comfort Level and Ability to Access RH Services in her Community



About 95% of women interviewed said they would feel comfortable accessing reproductive health services when needed, but fewer – 86% of Lebanese, 74% of Syrians, IS and 71% of Syrians, non-IS – said that they would be able to access them. When asked what the barriers would be, respondents gave the responses listed in Table 18. Cost or financial difficulties were stated by 70% of the women, and this was by far the major concern. Looking at the responses by strata, 81.3% of Syrians, non-IS, 71.8% of Syrians, IS but only 55.7% of vulnerable Lebanese had listed cost as a barrier to accessing RH services. Only six percent of all respondents had quality of care concerns, 4% said there were no locally available RH services, and 3% would have a problem getting to a health facility (distance/transportation). Several other reasons were listed by a few respondents each. Respondents could select more than one response.

Table 18 - Barriers to feeling comfortable or being able to access RH services in the respondent's community

| Why would you not feel comfortable or be able to access one of these services? | Number | Percent |
|--|------------|---------|
| Cost/financial difficulties | 123 | 70.3% |
| Low quality of care | 10 | 5.7% |
| There are no RH services here | 7 | 4.0% |
| Distance/transportation | 6 | 3.4% |
| Difficult getting an appointment/long waiting times | 4 | 2.3% |
| I don't need those services | 4 | 2.3% |
| Family reasons | 3 | 1.7% |
| I am new to the area/don't know the doctor | 3 | 1.7% |
| I don't know | 3 | 1.7% |
| I cannot go (no reason specified) | 2 | 1.1% |
| Privacy/trust concerns | 2 | 1.1% |
| Fear | 1 | 0.6% |
| I don't want/don't take advice | 1 | 0.6% |
| I don't know where it is located | 1 | 0.6% |
| I don't think about it | 1 | 0.6% |
| Medicines unavailable | 1 | 0.6% |
| Blood tests unavailable | 1 | 0.6% |
| Medical reasons (difficult pregnancy) | 1 | 0.6% |
| Total | 175 | |

Half of respondents across strata had sought a reproductive health service in the past six months. The service most accessed was antenatal care – by 38.4% of vulnerable Lebanese, 30.6% of Syrians, IS and 27.6% of Syrians, non-IS. This was followed by postnatal care – 28.6% of Lebanese, 14.5% of Syrians, IS and 11.9% of Syrians, non-IS. Fewer than 8% of women across strata had sought family planning or child spacing services in the six months prior to the survey (Figure 62 and Figure 63)

Figure 60 - Type of RH services accessed by respondent in the past six months, by Strata

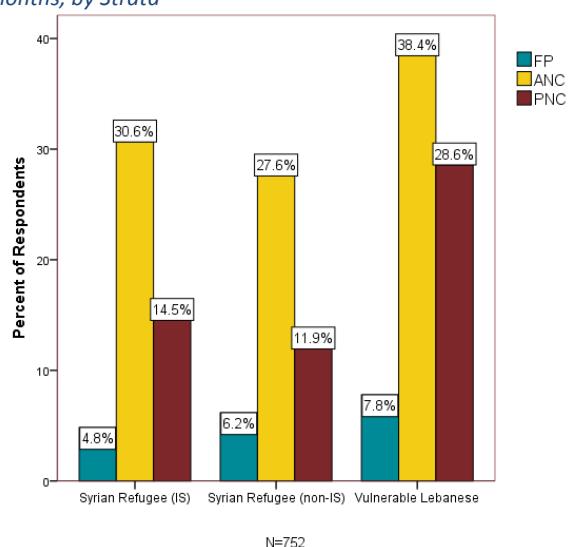
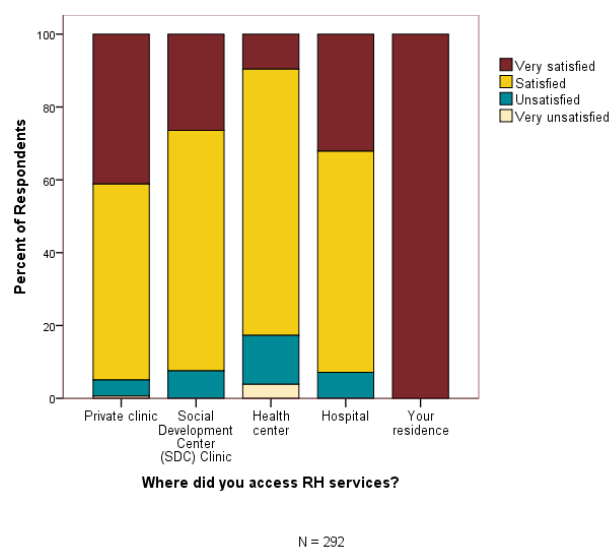


Figure 61 - Client satisfaction with recent RH services, by place



Respondents received RH services at various places and their satisfaction with services is shown by place in Figure 61. Across sites, respondents tended to be satisfied or very satisfied with the RH services. Those that received services at a residence all reported being very satisfied, but there was a percentage of women that were unsatisfied at each type of health facility. There was a very small percentage of very unsatisfied respondents that received services at health centers and private clinics. Health centers seem to have had more quality issues than SDCs, hospitals, or private clinics.

Of the 51.5% of vulnerable Lebanese respondents that had sought a reproductive health service in the six months prior to the survey, 94.2% had paid for that service. Similarly, nearly half of Syrians interviewed had sought RH services, but slightly less than four-fifths had paid for those services (Figure 62). The median amount paid (among respondents that paid) was \$30 (US dollars). The median RH service cost paid by vulnerable Lebanese was \$33, whereas it was only \$10 among Syrians, IS and \$12 among Syrians, non-IS; this difference was statistically significant. The mean payment amounts are shown by strata in Figure 63.

Figure 62 - Proportion of respondents that sought and paid for RH services in the past six months

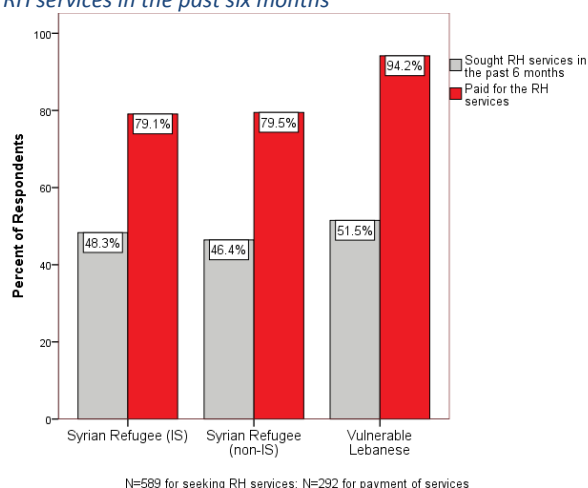
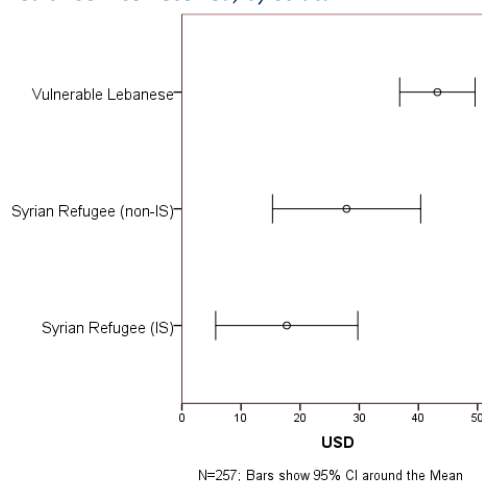


Figure 63 - Mean Payment (USD) for Most Recent Reproductive Health Service Received, by Strata



While the above RH services received and prices paid were related to a specific time period – the past six months - respondents were also asked what RH services they received, if they paid for them and what they paid, when they had their youngest child.

Medair Lebanon promotes the receipt of antenatal, delivery care, and postnatal care from skilled providers at the appropriate level of health facility. The following data are based on experiences with reproductive health care services during pregnancy and after the delivery of the respondent's youngest child. Figure 64 shows that coverage of RH services for respondents by a skilled provider was greatest for delivery care, followed by ANC, and PNC. Figure 65 shows that this same pattern was observed for receipt of RH services at a health facility. Coverage by a skilled provider and at a facility was greater for Lebanese than for Syrians for all RH services, but the difference was most prominent for postnatal care.

Figure 64 - Coverage of RH Services from a Skilled Provider, by Type and Strata

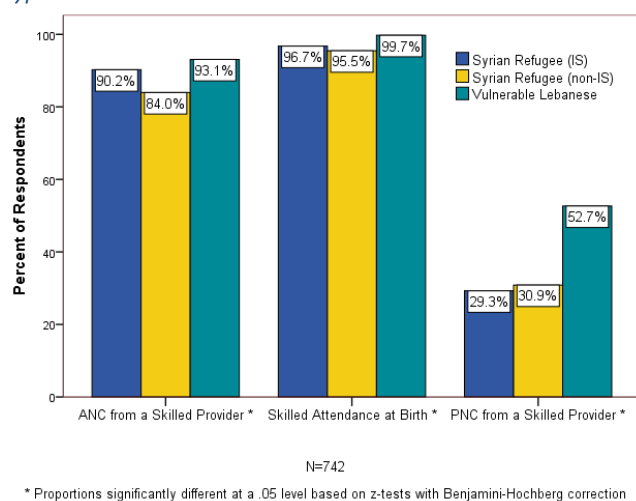
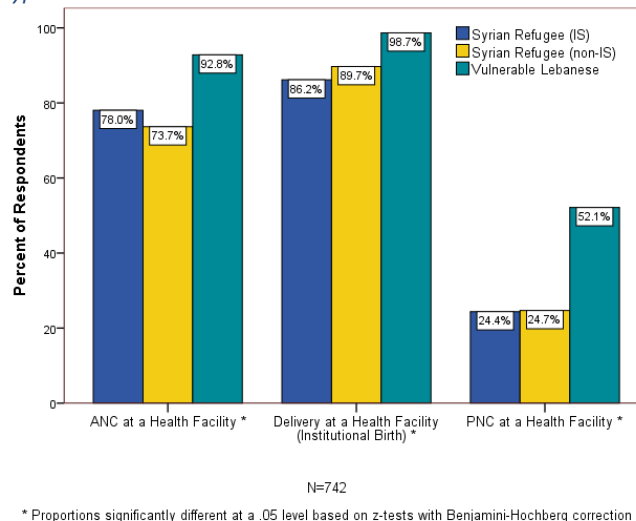
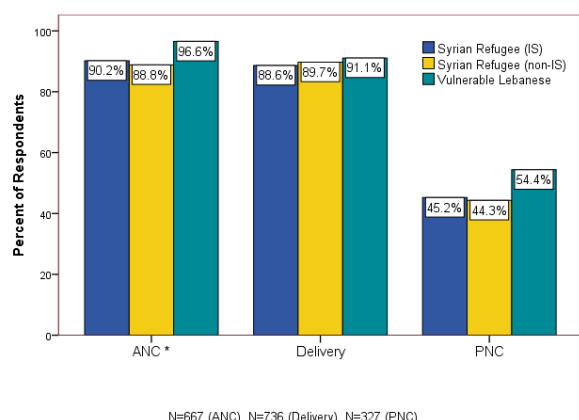


Figure 65 - Coverage of RH Services from a Health Facility, by Type and Strata



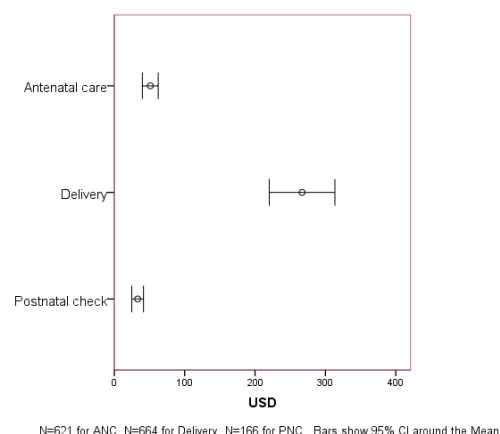
Payment data are shown in Figure 66 and Figure 67. While around 90% of respondents paid for ANC and delivery care, fewer than half had paid for PNC. Lebanese (97%) were more likely than Syrians (89-90%) to have paid for ANC. The mean paid for delivery services was significantly higher than that paid for ANC and PNC.

Figure 66 - Proportion of Respondents that Paid for RH Services During and After Pregnancy with Youngest Child, by Strata



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

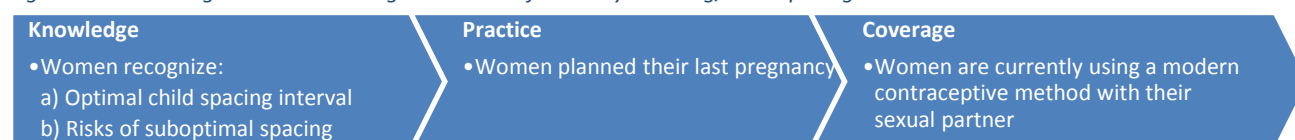
Figure 67 - Mean Payment (USD) for Reproductive Health Services Related to the Birth of the Respondent's Youngest Child, by Type of Service



Family Planning/Child Spacing

Figure 68 shows the K-P-C Continuum for family planning and child spacing. As was already shown above, the women interviewed in this survey seem to be more focused on RH services related to pregnancy and childbirth than to family planning and child spacing. This should be considered an area for further focused work by LCRP partners, including Medair Lebanon.

Figure 68 - Knowledge-Practice-Coverage Continuum for Family Planning/Child Spacing



The World Health Organization (2005, p. 18) has published the following recommendations regarding child spacing:

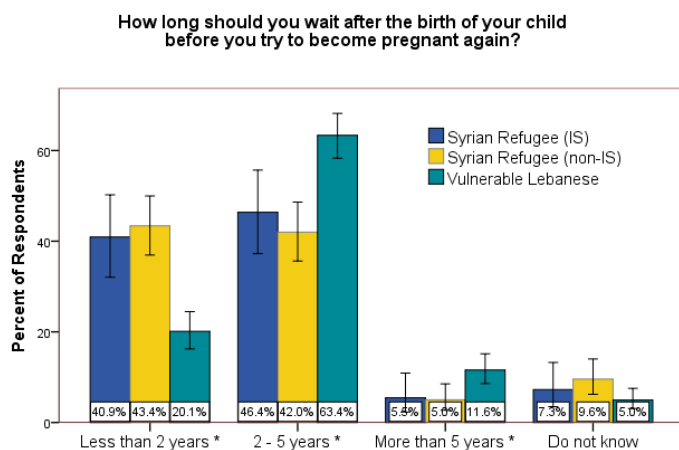
After a live birth, the recommended interval before attempting the next pregnancy is at least 24 months in order to reduce the risk of adverse maternal, perinatal and infant outcomes. After a miscarriage or induced abortion, the recommended minimum interval to next pregnancy is at least six months in order to reduce risks of adverse maternal and perinatal outcomes.

Yet when respondents were asked how long a woman should wait after the birth of one child before she tries to become pregnant again, Syrians were statistically more likely (over 40%) than Lebanese (20%) to say that less than two years was ideal (Figure 69). Five to ten percent across strata said they didn't know. When asked about the problem with spacing children too closely, respondents listed the risks shown in Table 19. Nearly one-quarter (23.4%) of the women interviewed did not know the risks of closely-spaced births.⁹ The most listed concern was maternal exhaustion (56%), followed by anemia (24%), miscarriage (17%), and maternal death (7%). The baby being born prematurely (too small – 6.6%, too early – 5.2%), and difficulty within the family when caring for multiple small children (3.5%) were next on the list. A few respondents each listed additional maternal and neonatal health concerns.

Table 19 - Women's Knowledge of the Risks of Suboptimal Child Spacing

| Risk | Number | Percent |
|---|------------|---------|
| Mother can suffer fatigue or exhaustion | 387 | 55.9% |
| Mother can suffer anemia | 164 | 23.7% |
| Do not know | 162 | 23.4% |
| Mother can have miscarriage | 114 | 16.5% |
| No risks | 47 | 6.8% |
| Mother can die | 46 | 6.6% |
| Baby born too small | 45 | 6.5% |
| Baby born too early | 36 | 5.2% |
| Family difficulties in caring for more children (risk of neglect, psychological problems, high costs) | 24 | 3.5% |
| Other maternal health problems (bone pain, open C-section wounds, chronic disease complications) | 6 | 0.9% |
| Baby nutritional deficiencies | 3 | 0.4% |
| Baby can be born with abnormalities, be disabled | 2 | 0.3% |
| Other baby health problems (fast heart rate) | 2 | 0.3% |
| Baby can die | 1 | 0.1% |
| Total | 692 | |

Figure 69 - Women with Knowledge of the Optimal Child Spacing Interval, by Strata



N=692

* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

Error bars: 95% CI

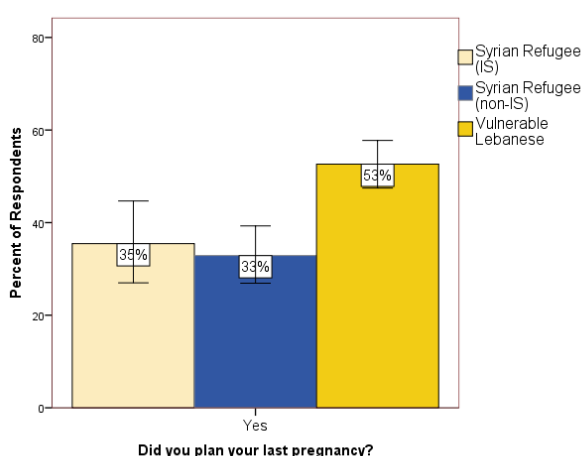
Over half of vulnerable Lebanese but only one-third of Syrian refugees interviewed had planned their last pregnancy.

Medair calculated both the contraceptive prevalence rate (CPR) and the modern contraceptive prevalence rate (mCPR) among 2016 KPC Survey respondents. While the CPR includes women that reported doing something or using any method to delay or avoid getting pregnant, the mCPR includes those women that reported using one of the following modern methods:

- Condom
- Female condom
- Diaphragm
- Female sterilization
- Implants
- Injectable
- Intrauterine Device (IUD)
- Pill
- Patch

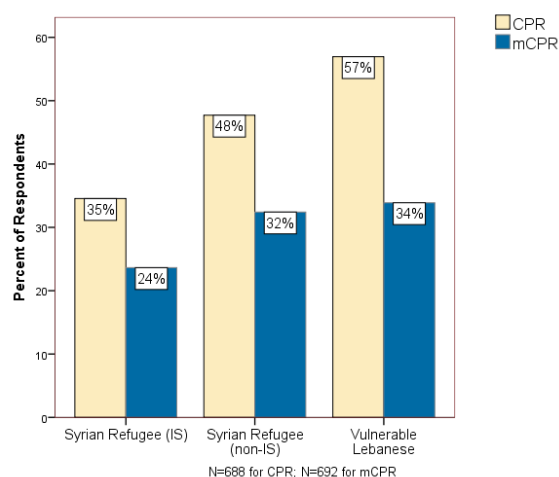
Both rates were calculated based on the women that currently reside with their husband. At the time of the survey, 57% of vulnerable Lebanese, 48% of Syrians, non-IS, and 35% of Syrians, IS were using any family planning method (CPR), and one-third of both Lebanese and Syrians, non-IS and one-quarter of Syrians, IS were using a modern method (mCPR). This is shown in Figure 71. CPR was 50.4% overall, and was higher in Baalbek (53.5%) and Zahle (52%) than in West Bekaa and Rachaya (40.7%). However, mCPR – 31.8% across all respondents - did not differ significantly by district.

Figure 70 - Women that Planned their Last Pregnancy, by Strata



N=690, Error bars: 95% CI

Figure 71 - Total and Modern Contraceptive Prevalence Rates, by Strata



N=688 for CPR; N=692 for mCPR

Given that contraception should be used any time a sexually active person does not want more children, the CPR and mCPR seem indicative of unmet need for family planning. However, without specific questions about fertility desires, we do not know this. According to the MEASURE Evaluation Family Planning and Reproductive Health Indicator Database (MEASURE Evaluation, 2017):

Unmet need for family planning = The number or percent of women currently married or in union who are fecund and who desire to either terminate or postpone childbearing, but who are not currently using a contraceptive method.

Its calculation requires the responses to survey questions on:

- Desire for additional children and, if so, the desired length of birth interval;
- Current contraceptive use status;
- *Current fecundity, pregnancy, and amenorrhea status for women not currently using a contraceptive method;*
- The planning status (number and/or timing) of the current/last pregnancy for women currently pregnant or amenorrheic; and
- Use (or not) of a contraceptive method at the time of the current/last pregnancy.

It is recommended that this full set of questions be asked to calculate unmet need in future KPC Surveys.

When women were asked why they weren't using a family planning method (Table 20), one third said that they were currently pregnant, and 23% said that they were currently breastfeeding. An additional 8.7% reported that the reason for not using contraception was that they wanted to get pregnant again and 3.3% said that their husband wanted more children. Out of the respondents not currently using contraceptive methods, for 68.3%, it is either because they have been pregnant recently, are currently pregnant or want to become pregnant. One- fifth said they didn't want to use family planning. Only 27% of respondents had discussed family planning or child spacing with a health care provider in the last year.

Table 20 - Reasons Reported by Respondents for Not Currently Using a Family Planning Method

| Reason | Number | Percentage |
|--|------------|------------|
| I am pregnant | 108 | 32.5% |
| I am breastfeeding | 75 | 22.6% |
| I do not want to use birth control methods | 70 | 21.1% |
| I want to become pregnant | 29 | 8.7% |
| My husband wants to have more children | 11 | 3.3% |
| Both my husband's and my religious reasons | 9 | 2.7% |
| My husband's religious reasons | 6 | 1.8% |
| I have already experienced or am afraid of FP side effects | 5 | 1.5% |
| The birth control method that I want to use is not available | 4 | 1.2% |
| Recently delivered/FP unnecessary for 40 days after delivery | 4 | 1.2% |
| I have difficulties getting pregnant even without an FP method | 4 | 1.2% |
| Health problems (allergy, hypertension, bleeding, need rest) | 4 | 1.2% |
| My religious reasons | 3 | 0.9% |
| Cost | 3 | 0.9% |
| I am menopausal | 2 | 0.6% |
| I want to go to a doctor to get FP but haven't yet | 1 | 0.3% |
| My husband and I haven't agreed on an FP method | 1 | 0.3% |
| I don't like to take any medications | 1 | 0.3% |
| Husband is ill | 1 | 0.3% |
| Once you use FP, it may be hard to get pregnant for 10 years | 1 | 0.3% |
| Total | 332 | |

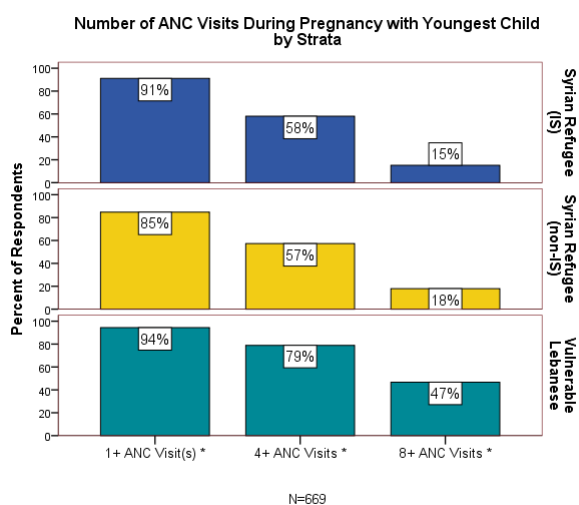
Antenatal Care

In 2016 the World Health Organization changed its recommendations for antenatal care from 4 or more ANC visits to 8 or more ANC contacts during pregnancy, with a focus on specific content being covered in these contacts throughout the course of the pregnancy. Medair's programme designs and targets for 2016 were written before these recommendations were published, under previous guidelines and so data collection and analysis has been focused on 4 ANC visits or more. The 2016 KPC Survey asked about the number of visits but not about their content.

Figure 75 shows that over 85% of respondents from each strata had received at least one ANC visit during the pregnancy with their youngest child, and nearly sixty percent of Syrians and 80% of Lebanese had 4 or more visits. Interestingly, almost half of Lebanese were already meeting the targeted 8 or more ANC contacts while fewer than one fifth of Syrians had done so.

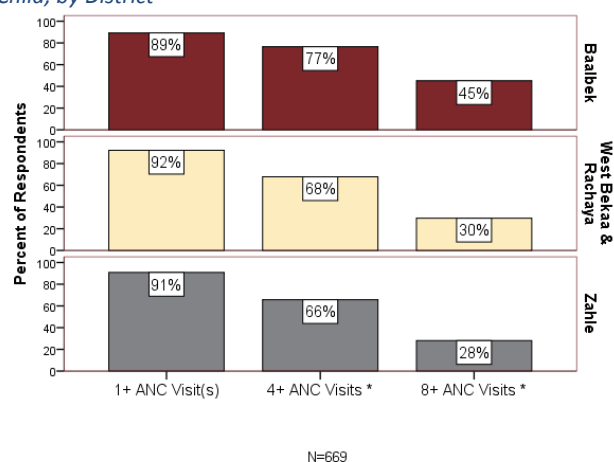
Looking at the data geographically, mothers in all districts were equally likely to have received any ANC during pregnancy with their youngest child. However, women living in Baalbek were significantly more likely than their counterparts in Zahle, West Bekaa and Rachaya to have had 4 or more ANC visits or 8+ ANC contacts (Figure 73). Figure 74 is a boxplot that shows the median number of ANC visits, by strata.

Figure 72 - Number of ANC Visits During Pregnancy with Youngest Child, by Strata



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

Figure 73 - Number of ANC Visits During Pregnancy with Youngest Child, by District



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

Figure 74 - Boxplot of Number of ANC Visits During Respondent's Most Recent Pregnancy, by Strata

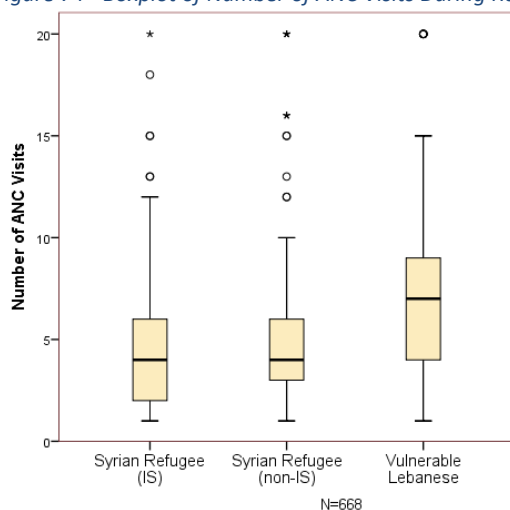


Figure 75 shows that on average Lebanese respondents had begun their ANC visits by the second month of pregnancy, while Syrians started ANC during the second or third month. Fewer than 10% of mothers had their last ANC visit prior to 8 months of gestation (Figure 76). To summarize, most respondents received antenatal care starting early in pregnancy and up until their delivery.

Figure 75 - Mean Months of Gestation when Antenatal Care was First Received During Pregnancy with Youngest Child, by Strata

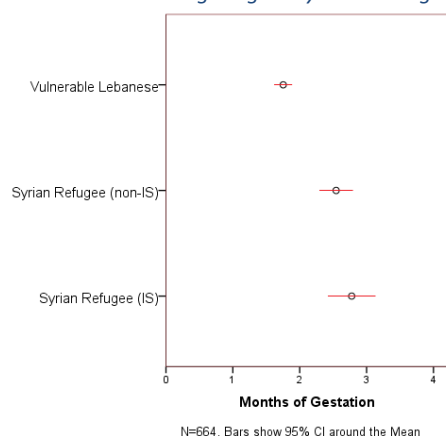
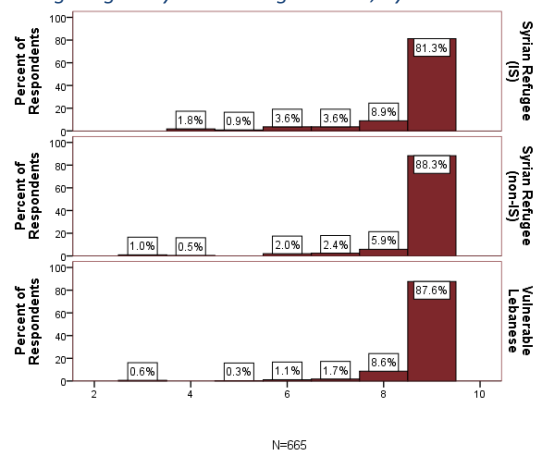


Figure 76 - Histogram of Months of Gestation at Last ANC Visit, During Pregnancy with Youngest Child, by Strata

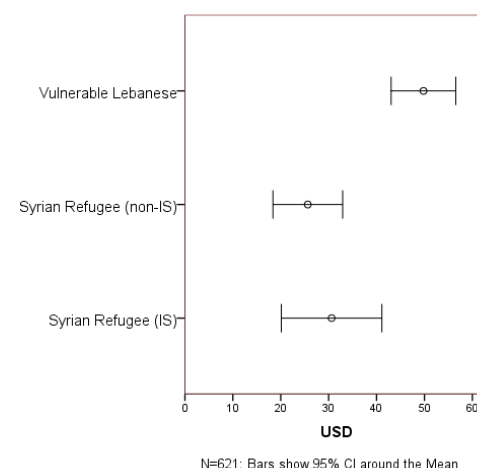


Those respondents that did not receive ANC were asked why not, and gave the responses shown in Table 21. As in similar questions on which results were presented earlier, cost was the factor listed by the most respondents even though considerable subsidies are available for RH services in Lebanon. One third said that they didn't think antenatal care was necessary, highlighting the need for ongoing awareness raising. The reach of CHWs and public education campaigns to encourage pregnant women to go to ANC needs to be further monitored. Eleven percent cited transportation issues; however, there are vouchers available for transportation at NGO-supported clinics, making this a priority to be discussed in ongoing awareness raising. A few respondents each listed several other reasons for not getting ANC, including being busy and family issues.

Table 21 - Obstacles in Going to Receive Antenatal Care (ANC)

| Obstacle | Number | Percent |
|---|------------|---------|
| The health facility was too expensive | 126 | 45.3% |
| I did not think it was necessary | 92 | 33.1% |
| The health facility was too far away | 31 | 11.2% |
| I was not able to find transportation | 30 | 10.8% |
| There were no obstacles | 17 | 6.1% |
| I do not know where a clinic is | 7 | 2.5% |
| War situation in Syria | 4 | 1.4% |
| I do not like the health facility (people, atmosphere, etc) | 2 | 0.7% |
| Mental/psychological issues | 2 | 0.7% |
| Family issues | 1 | 0.4% |
| I don't know | 1 | 0.4% |
| I was busy working | 1 | 0.4% |
| Total | 278 | |

Figure 77 - Mean Payment (USD) for Antenatal Care Services, by Strata



Vulnerable Lebanese respondents paid more on average for ANC than Syrians in both strata (Figure 77).

Giving Birth in a Health Facility

Nearly all respondents had the delivery of their youngest child attended by skilled personnel (97.8%) and for the majority, this delivery occurred at a health facility (93.7%). Those women that did not deliver in a hospital or clinic were asked why, and gave the reasons listed in Table 22. Following the pattern seen in similar survey questions, cost is the major factor (45%), followed by not thinking this service – delivery care at a facility – is necessary (23%), distance (8.5%), transportation (4.3%), and some quality concerns. Awareness of where facilities are located and that vouchers are available both for transportation and services would seem to need further work based on these responses. In addition, four women stated that their labor was quick – but may not know about locally available ambulances that may have been able to take them to a facility on time.

Table 22 - Reason for Not Delivering Youngest Child at a Hospital or Clinic

| Reason | Number | Percent |
|---|-----------|---------|
| The health facility was too expensive | 21 | 44.7% |
| I did not think it was necessary | 11 | 23.4% |
| The health facility was too far away | 4 | 8.5% |
| My labor was quick | 4 | 8.5% |
| I wanted to respect traditions | 3 | 6.4% |
| I was afraid I would have a C-section | 2 | 4.3% |
| I was not able to find transportation | 2 | 4.3% |
| I do not know where a clinic is | 2 | 4.3% |
| I do not like the health facility (people, atmosphere, etc) | 1 | 2.1% |
| I have heard bad things about the health facility | 1 | 2.1% |
| Total | 47 | |

Cesarean sections may be either planned or done on an emergency basis due to maternal or fetal indications. According to the World Health Organization (2015a, p. 1), "since 1985, the international healthcare community has considered the ideal rate for caesarean sections to be between 10% and 15%." A study by Molina, *et al* (2015) has since updated the international recommendation, by demonstrating that 19% is the optimal C-section rate to lower maternal and neonatal mortality on a population level. Because rates above 19% are not associated with any further reduction in mortality, C-section coverage rates higher than this may represent an unnecessary drain on medical resources. The rate found among all KPC respondents based on the birth of each woman's youngest child was 47.4%. shows that across all strata and districts, more than 20% of all deliveries are C-sections. For Syrians, non-IS, the rate is higher than one-third in each district, and in vulnerable Lebanese it ranges from 50 – 64%, with the highest rates in Baalbek, West Bekaa and Rachaya .

Figure 78 - C-section Rate, by Strata and District

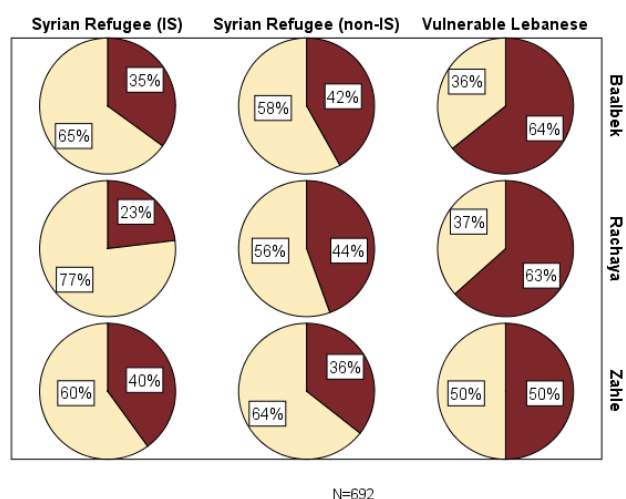
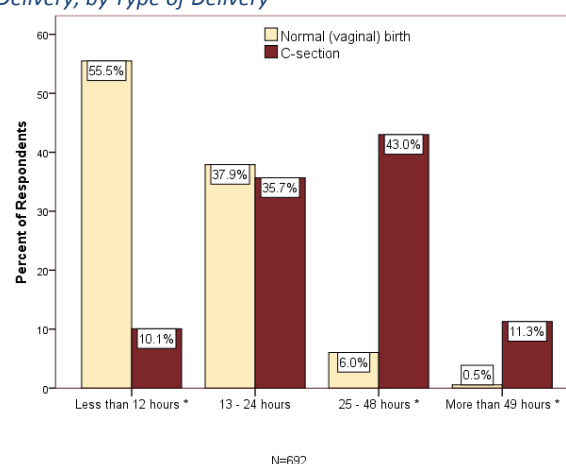


Figure 79 - Length of Stay at Health Facility following Delivery, by Type of Delivery



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

The current World Health Organization recommendation (2013, p. 3) on hospital length of stay after delivery of a child is:

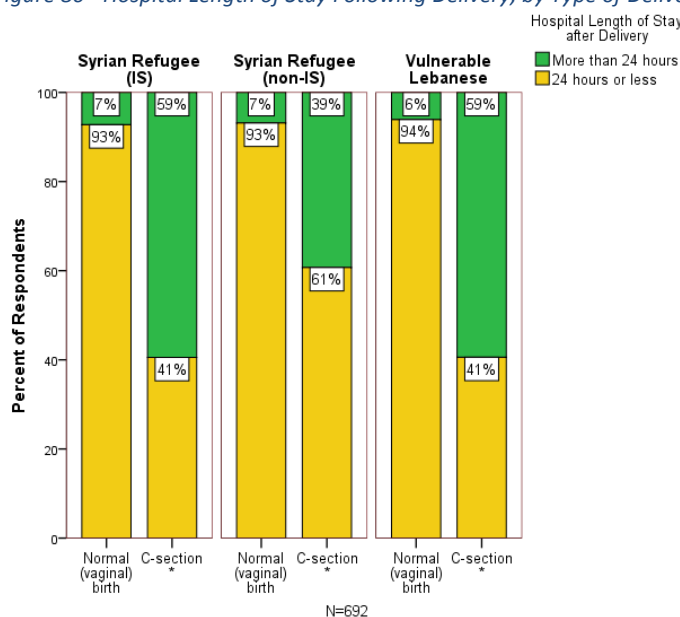
After an uncomplicated vaginal birth in a health facility, healthy mothers and newborns should receive care in the facility for at least 24 hours after birth.

The American College of Gynecology (ACOG, 2015) guidance to patients states that:

A hospital stay after a cesarean birth usually is 2–4 days.

Furthermore, the US Newborns' and Mothers' Health Protection Act states that "[health plans] that provide benefits for a hospital length of stay in connection with childbirth for a mother or her newborn may not restrict benefits for the stay to less than— (i) 48 hours following a vaginal delivery; or (ii) 96 hours following a delivery by caesarean section" (29 U.S. Code § 1185 1996). Those 2016 KPC Survey respondents that had C-sections did stay longer in the hospital after delivery than those that had vaginal deliveries (Figure 79). For those women that had vaginal births, over 90% across all strata stayed in the hospital for 24 hours or less. Figure 80 displays that among those having cesarean deliveries, vulnerable Lebanese were significantly more likely than Syrians, non-IS to stay in the hospital more than 24 hours. The C-section rate for Syrians, IS looks the same as that for Lebanese, but is based on a small sample size of 37 C-section births, so the difference between this group and Syrians, non-IS was not significant. To summarize, given the above-referenced guidelines, it is troubling to see that 55.5% of those with vaginal births and 10% of women that had C-sections were discharged from the hospital less than 12 hours after delivery. Medair Lebanon could further educate women in their community health promotion activities of the importance of staying in the hospital for clinical monitoring for a minimum length of time following childbirth so that the women and their families can advocate for this level of care.

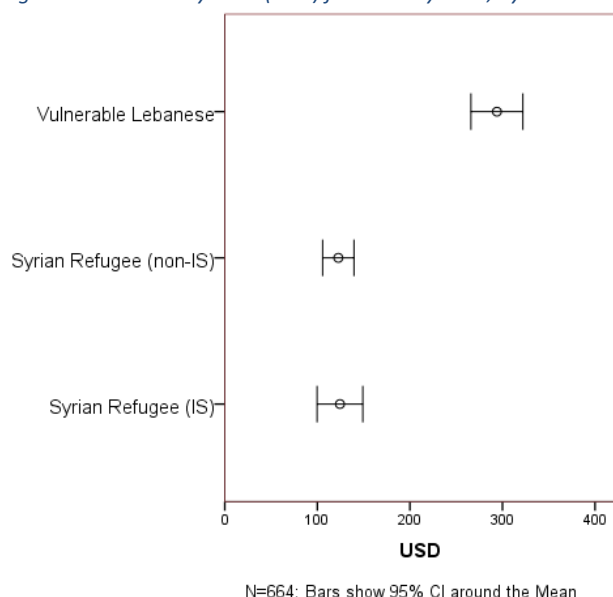
Figure 80 - Hospital Length of Stay Following Delivery, by Type of Delivery and Strata



* Column proportions were significantly different at the .05 level based on z-tests with the Benjamini-Hochberg correction

As was true with antenatal care, Lebanese respondents reported paying a higher price for delivery care than Syrians (Figure 81). Part of this variation in payment amount may be due to the higher C-section rate among Lebanese.

Figure 81 - Mean Payment (USD) for Delivery Care, by Strata



Postnatal Care

Postnatal care (PNC) was accessed by fewer respondents than either ANC or delivery care. There may not be the needed awareness of its importance especially with regard to postpartum hemorrhage and other risks to the mother and neonate immediately after childbirth.

The majority of maternal and newborn deaths occur within a few hours after birth, mostly within the first 48 hours. Deaths in the newborn period (first 28 days) are a growing proportion of all child deaths. Postnatal contacts, especially within the first few days following birth, are a critical opportunity for improving maternal and newborn health and survival and for provision of information about birth spacing. (Countdown to 2015 and Health Metrics Network, 2011, p. 33)

The World Health Organization (2013, p. 3) recommends that women receive postnatal care as follows:

If birth is in a health facility, mothers and newborns should receive postnatal care in the facility for at least 24 hours after birth.

If birth is at home, the first postnatal contact should be as early as possible within 24 hours of birth.

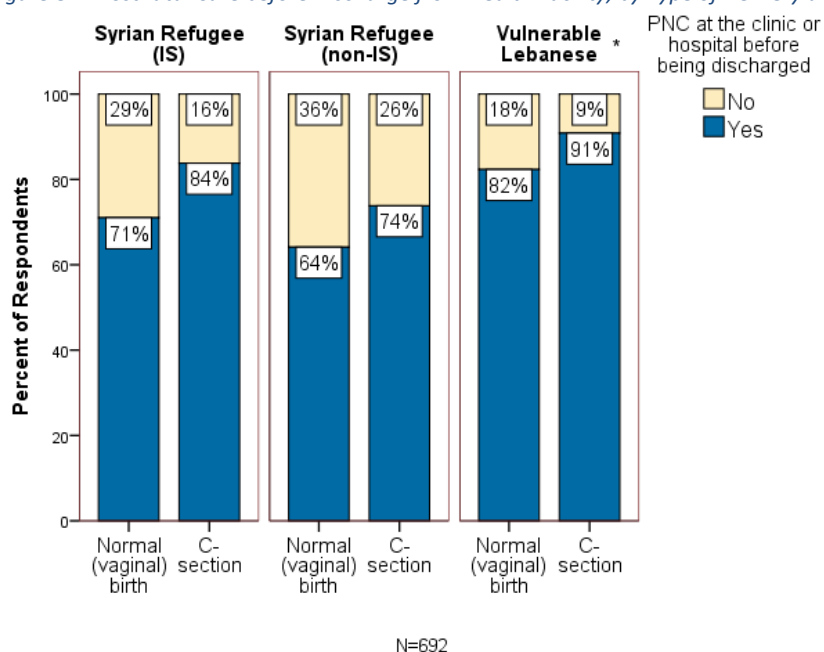
At least three additional postnatal contacts are recommended for all mothers and newborns, on day 3 (48–72 hours), between days 7–14 after birth, and six weeks after birth.

The postnatal care indicator currently used by the WHO in its Core Health Indicator List (2015, p. 78) is:

Percentage of mothers and babies who received postpartum care within two days of childbirth (regardless of place of delivery).

However, the 2016 KPC Survey did not ask this particular question. The closest approximates to this in the questionnaire were receipt of a postnatal check at the hospital or clinic prior to discharge and receipt of first PNC check within three days for a home birth. Women that had a C-section were more likely than those that had vaginal births to report having received PNC before being released from the hospital (Figure 82). Lebanese were more likely than Syrians to report facility-based PNC prior to discharge.

Figure 82 - Postnatal Care before Discharge from Health Facility, by Type of Delivery and Strata



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

About one-third of Syrians living in informal settlements had received a postnatal check within three days of delivery after a home birth (Figure 83), but given that there were only 47 home births in the sample, no statistically significant differences were noted by strata or district.

Like Figure 82, Figure 84 shows the variation in PNC coverage by delivery type and strata, but this graph is on PNC within two weeks of delivery, while the previous one showed PNC prior to discharge from the health facility. The slightly higher coverage rates in this graph mean that women are getting additional postnatal check(s) following discharge from the facility, within 14 days of delivery.

Figure 83 - PNC within 3 days of Home Birth, by District and Strata

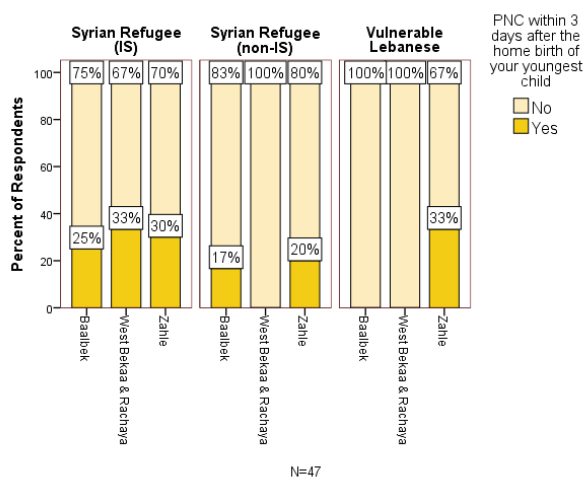
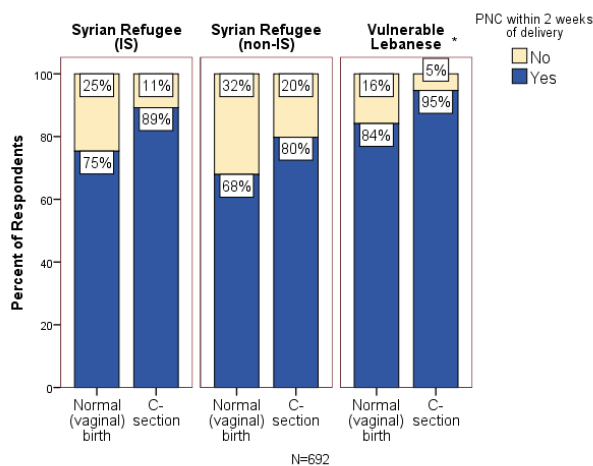


Figure 84 - Postnatal Care within 2 Weeks of Delivery, by Type of Delivery and Strata



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

Figure 85 illustrates that whether women gave birth at home or in a health facility, the first postnatal visit was nearly equally likely to have occurred in the first week, within 7 – 13 days or later than 14 days after delivery. International standards are calling for PNC within the first two days for lifesaving care, so those women that receive the initial PNC check after that are not receiving the minimum standard of care. Given that we already saw that percentages were much higher than this for receipt of PNC before discharge from the health facility for institutional births, respondents may have interpreted this as the timing of the first PNC visit after that initial check at the facility. Figure 86 shows the variation in receipt of the second PNC visit within two weeks of delivery. Rates are higher among Lebanese and higher in Baalbek than the other districts.

Figure 85 - Timing of First Postnatal Visit by Place of Delivery (Institutional vs. Non-institutional)

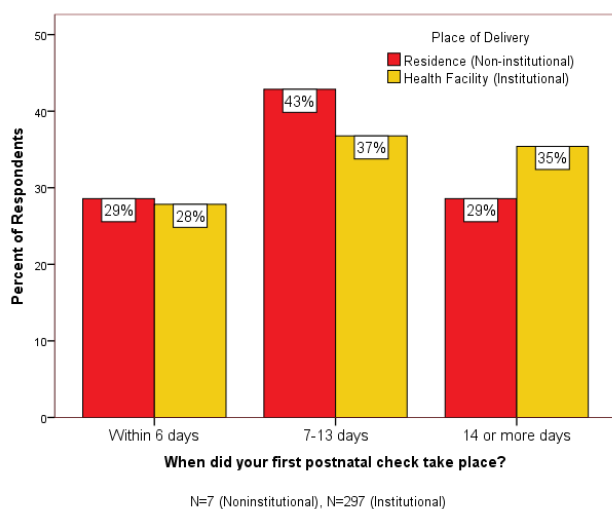
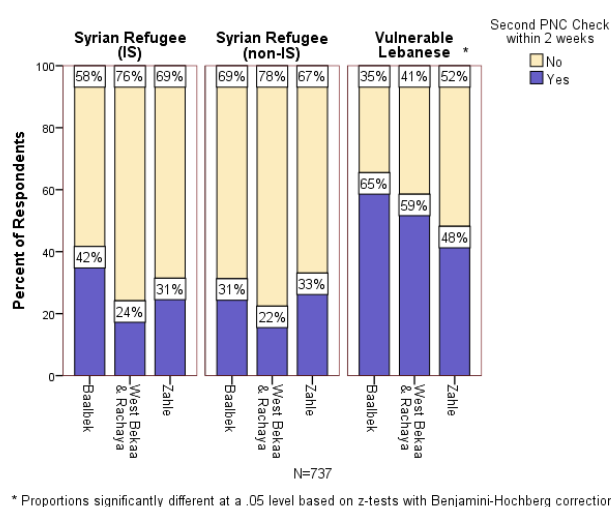


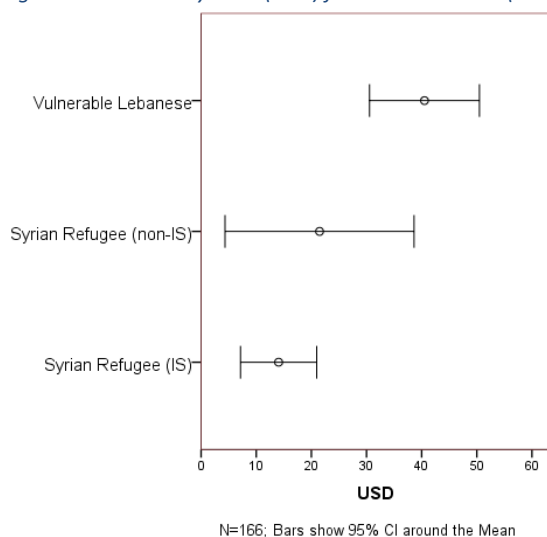
Figure 86 - Second Postnatal Check within Two Weeks of Delivery, by District and Strata



Postnatal care charges are lower than those for delivery.

Figure 87 shows that the amount paid by Lebanese for PNC was significantly higher than that paid by Syrians, IS, but the confidence intervals for Lebanese and Syrians, non-IS overlap. Given that they live within the same neighborhoods, they may be going to the same providers and encountering similar fees. That the CIs around the mean for the two Syrian populations overlap is also logical given that under the Lebanese Crisis Response Plan, all registered Syrian refugees are offered subsidized health care at nominal fees. Some of the Lebanese that can – because of their citizenship – avail themselves of low prices at MoPH PHCCs and MoSA SDCs, are clearly opting to go to private clinics for health care throughout the year as we have seen in previous sections of this report. This may be raising the mean prices for the group even if some are getting health care at PHCCs and SDCs managed by the public sector.

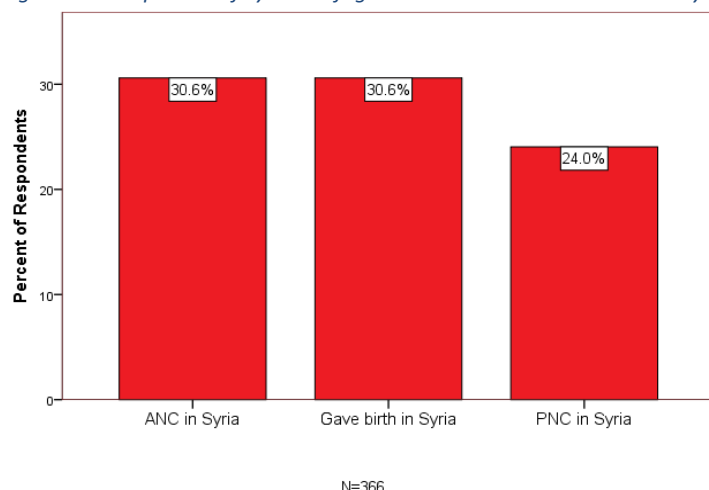
Figure 87 - Mean Payment (USD) for Postnatal Care (PNC), by Strata



Refugee Pregnancy

Syrian refugee respondents were asked where they received reproductive health services related to their pregnancy with and for the delivery of their youngest child. Thirty-one percent received antenatal care in Syria, the same percentage gave birth in Syria (not necessarily the same women), and one-quarter received postnatal care in Syria (Figure 88).

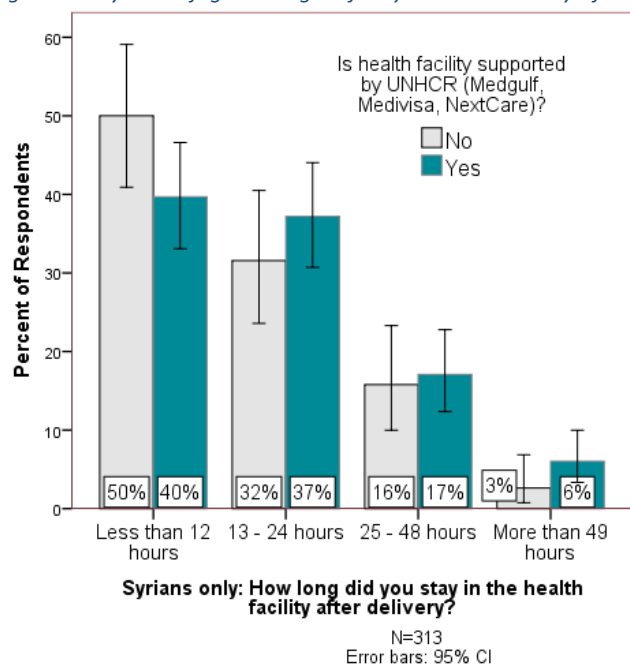
Figure 88 - Proportion of Syrian Refugees that Received RH Services in Syria During and After Birth of their Youngest Child, by Type



Three-quarters of those that delivered in Syria said they were living in Syria at the time. Thirteen percent had family in Syria, and 12% said delivery in Lebanon was too expensive. Four percent reported being stuck at the border while pregnant (it wasn't clear in which direction they were traveling), and two respondents said that had wanted to immediately register their child in Syria.

For those Syrians that delivered their youngest child at a health facility in Lebanon, Medair was interested in knowing whether it was at a UNHCR-supported facility that receives payment for refugee medical services through a third-party administrator (the current TPA is NEXTCARE), 313 Syrian women responded to that question. A significantly higher proportion of Syrians living in informal settlements (72.3%) said that they had delivered in a UNHCR-supported facility as compared to Syrians, non-IS (59.4%). Medair then looked at the length of stay at the hospital following delivery, which revealed no differences based on the facility's receipt of UNHCR support. The confidence intervals overlapped for all point estimates shown in Figure 89.

Figure 89 - Syrian Refugees' Length of Stay at Health Facility After Delivery, by UNHCR-Supported Status of Facility



Family Health

Non-communicable Disease (NCDs)

In 2015, 12.1% of Lebanese adults age 20 – 79 years had diabetes (IDF, 2015), with the rate increasing by age (Figure 90). A 2013-14 research study calculated a national 12% prevalence rate of coronary heart disease in the population of adults over 40 years of age across Lebanon (Zeidan, *et al*, 2016). The percentage of adults in the Bekaa region with hypertension has increased over the past decade from a 2002-3 level of 17.2% of those over 30 years of age (Tohme, *et al*, 2005) to a 2012-13 level of 39.5% in those over 20 years of age (Matar, *et al*, 2015). As further contextual information, the Lebanese Ministry of Public Health Noncommunicable Disease Control Plan for 2016-2020 has published the national risk factor prevalence data shown in Figure 91, with the caveat that

selection bias in the study may have resulted in overestimates. One of the interventions in the plan is “to promote behavioral change to healthier lifestyles through multisectoral initiatives and campaigns, in three major areas of exposure: tobacco use, unhealthy diets and insufficient physical activity. Early detection of high blood pressure, blood cholesterol and diabetes should also be promoted.” (GoL MoPH and WHO, 2016, p. 16).

Figure 90 - Prevalence of Diabetes in Adults by Age, Lebanon, 2015 (Source: International Diabetes Federation, 2015)

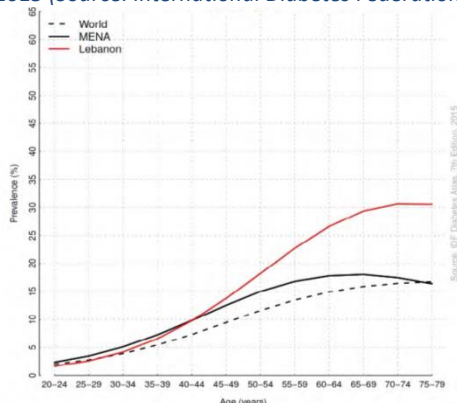


Figure 91 - Risk Factors for NCDs in Lebanon, 2010 (Source: Lebanon Ministry of Public Health, 2010 (STEPS data), p. 8)

| Risk factors (%) | Males | Females | Both |
|--------------------------------|-------|---------|------|
| Current cigarette smoking | 46.8 | 31.6 | 38.5 |
| Current narguileh smoking | 23.3 | 21.6 | 22.4 |
| Low level of physical activity | 52.4 | 40.3 | 45.8 |
| No vigorous physical activity | 76.9 | 90.6 | 84.5 |
| Never measured blood pressure | 20.4 | 12.6 | 16.1 |
| Never measured blood sugar | 36.2 | 24.2 | 29.6 |
| Overweight or obese | 72.9 | 59.4 | 65.4 |
| Overweight | 44.2 | 32.9 | 38.0 |
| Obese | 28.7 | 26.5 | 27.4 |

The 2016 KPC Survey asked respondents if they had family members with either high blood pressure/hypertension (cardiovascular disease) or diabetes, but did not inquire about cancer, mental illness, or chronic respiratory disease, which are also NCDs. Women were asked how they think people can reduce the risk of getting cardiovascular disease or diabetes. The KPC questionnaire did not ask if respondents themselves had an NCD, but did ask whether they had taken any medication for an NCD in the past two weeks, and if so, where they got the medication from and whether they paid for it. Nearly 20% of respondents reported having one or two family members with high blood pressure or hypertension, while 10% reported having one or two family members with diabetes.

Figure 92 - Number of Respondent Family Members with High Blood Pressure or Hypertension

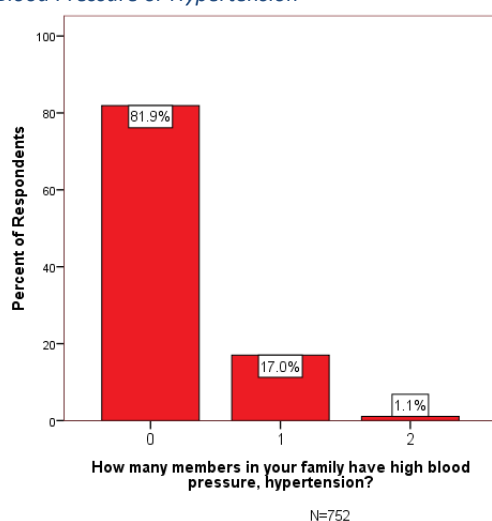


Figure 93 - Number of Respondent Family Members with Diabetes

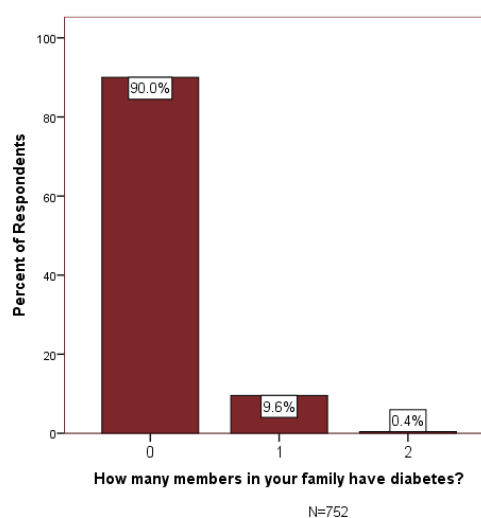
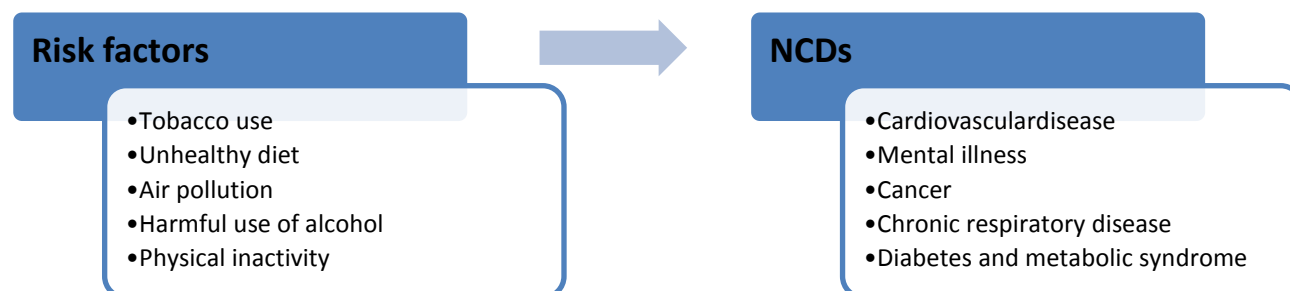


Figure 94 - Risk Factors and NCDs (Source: Updated from World Economic Forum, 2017, p. 4)



The respondents' list of what people can do to reduce the risk of getting these NCDs is shown in. While 34.2% said to reduce salt intake and over 41.6% said to consume less sugar, one-third stated they didn't know how to reduce NCD risk. One-fifth each recommended stress/anger reduction and taking medicine. One sixth said that eating a healthier diet makes a difference and 7% suggested reducing the quantity of food eaten. Fewer than five percent of women mentioned four of the well-publicized measures highlighted by a recent World Economic Forum paper, shown in Figure 94: smoking cessation, reducing the quantity of meat in the diet, reduction of alcohol consumption and increasing physical activity/exercise. Fewer than one percent of respondents said to get regular medical exams, demonstrating a lack of knowledge of secondary and tertiary prevention.

Table 23 - Respondents' Knowledge of Behaviors that can Reduce the Risk of Getting NCDs

| Risk Reduction Behavior | Number | Percent |
|---|------------|---------|
| Reduce sugar consumption | 313 | 41.6% |
| Reduce salt consumption | 257 | 34.2% |
| Do not know | 253 | 33.6% |
| Reduce stress or anger | 162 | 21.5% |
| Take medicine | 151 | 20.1% |
| Eat more healthy food (fruit, vegetables) | 117 | 15.6% |
| Reduce quantity of food eaten | 50 | 6.6% |
| Stop smoking | 32 | 4.3% |
| Get more exercise | 31 | 4.1% |
| Reduce quantity of meat eaten | 30 | 4.0% |
| Reduce alcohol consumption | 13 | 1.7% |
| There is nothing that can be done | 8 | 1.1% |
| Go to the doctor for regular examinations | 3 | 0.4% |
| Drink more water | 1 | 0.1% |
| Total | 752 | |

Out of those who reported a non-communicable disease in their households, about sixty percent of respondents across strata had taken medication for an NCD in the past two weeks (Figure 95). Figure 96 shows that Syrians, IS were the most likely of the strata to get free NCD medications (42% compared to 13% of Syrians, non-IS and 4% of Lebanese). Meanwhile, Syrians, non-IS (13%) and vulnerable Lebanese (17%) were more likely to get subsidized medications than Syrians, IS (5%), or to pay -- about three-quarters versus half of Syrians, IS. About one-third of respondents procured their NCD medications from a pharmacy and another third got them from a health center. One tenth got their medicine from an SDC and 7% had theirs provided by a community distributor (Figure 96).

Figure 95 - Proportion of Respondents that have Taken Medication for an NCD in the Past Two Weeks, by Strata

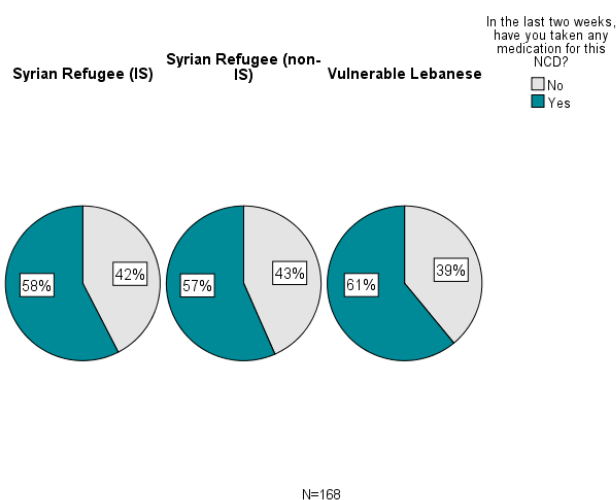


Figure 96 - Respondents' Procurement of NCD Medications (Free, Subsidized or Paid), by Strata

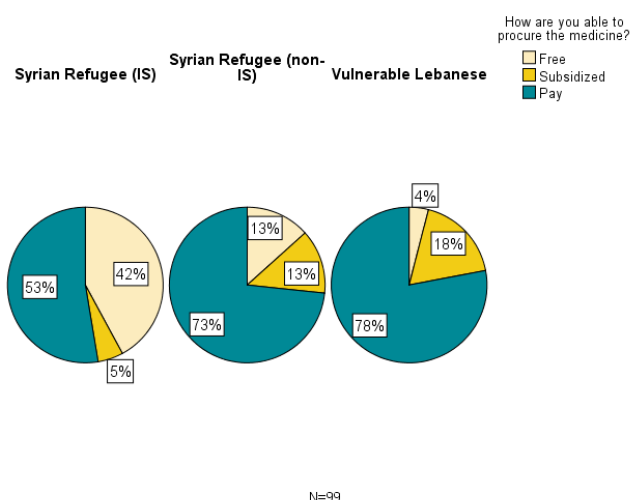


Table 24 - Respondents' Sources of NCD Medications

| Source | Frequency | Percent |
|--|-----------|--------------|
| Pharmacy | 10 | 35.7 |
| Health center | 9 | 32.1 |
| Social Development Center (SDC) Clinic | 3 | 10.7 |
| Community distributor | 2 | 7.1 |
| Friends/relatives | 1 | 3.6 |
| Field health worker | 1 | 3.6 |
| Other (e.g., NGO) clinic | 1 | 3.6 |
| Hospital | 1 | 3.6 |
| Total | 28 | 100.0 |

One of the conceptual models commonly found in hypertension studies (such as Matar, *et al*, 2016) is shown in Figure 97. The KPC Survey does not measure NCD prevalence through any biomarkers as is typically done to estimate disease prevalence. When respondents are asked if any of their family members have an NCD, the result is a combination of both prevalent cases within the family and the respondent's awareness of those diagnoses. When respondents were asked if they had recently taken an NCD treatment, we do not know the denominator of all respondents with a biomarker for an NCD which would represent prevalent cases. Finally, no assessment is done in the KPC Survey to determine whether the disease is controlled by treatment. Medair should either look to other population-based data sources in Lebanon for this information or consider adding these concepts to future KPC studies. Notwithstanding, this section of the survey should be revisited to assure that the intended use of the data aligns with the questions asked.

Figure 97 - Conceptual Model for the Study of Hypertension (Source: Matar, *et al*, 2016)

Potential NCD prevention and control interventions by both Medair-deployed Community Health Workers and clinical staff at Medair-supported SDCs are listed in the Recommendations section of this report.

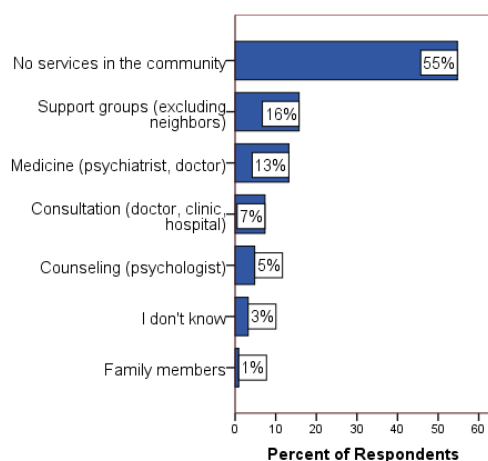
Psychosocial Support Services

The Lebanese National Mental Health Program (a governmental program with technical support provided by WHO, UNICEF and International Medical Corps, IMC) has launched the 2015-2020 Mental Health and Substance Use Prevention, Promotion, and Treatment Strategy. Its workplan includes the integration of the WHO Mental Health Action Program (mhGAP) in 100 PHCCs, aligning university curricula with mhGAP (WHO, 2016) by training 40 academics/academic staffs, the establishment of a national mental health information system at PHCCs, hospital psychiatric wards and psychiatrist offices, the establishment of a mental health referral system, updating national accreditation standards to include all relevant mental health criteria, as well as population-based and institutional assessments, and public mental health promotion and prevention (GoL MoPH, 2015). Given the recent timing of the launch of this initiative, the KPC Survey respondents are likely to reside in areas where scaling up is just beginning or is a work in progress.

When asked what types of support services are available in their community for someone who feels very sad, stressed, lonely, under pressure or affected by trauma, 56.8% of respondents said there were no such services available locally and 3.3% said they didn't know. Specific services listed were support groups (16.3%), psychiatrists and other physicians that can prescribe medications (13.7%), consultations at a doctor's office, clinic or hospital (7.6%), counseling from a psychologist (5%), and family members (1%). See .%), shown in Figure 98. Lebanese were more likely than Syrians to list prescribed medications as well as counseling.

When asked where someone can access psychosocial support services in their community, respondents listed those shown in Table 25. About one-fifth each said there were no local services, so people had to deal with problems on their own, or that they didn't know. A fifth said that clinics whether run by NGOs, the private sector or government were sources, and 14% listed specialized hospitals. One-tenth suggested religious organizations and 7% said that CHWs could provide psychosocial support. Seven percent mentioned SDC clinics.

Figure 98 - Respondent's Knowledge of Locally Available Psychosocial Support Services



N=539

Figure 99 - Respondent Comfort Level and Ability to Access Psychosocial Services when they or Someone they Care About is in Need

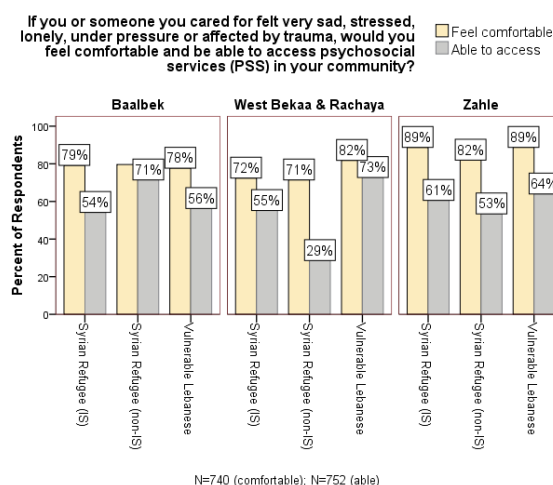


Table 25 - Respondents' Knowledge of Sources of Psychosocial Support in the Local Community

| Sources of Psychosocial Support | Number | Percent |
|--|------------|---------|
| No services - people must deal with it alone | 160 | 21.9% |
| Other clinic (NGO, private, health centers) | 154 | 21.1% |
| I don't know | 154 | 21.1% |
| Specialized hospital | 103 | 14.1% |
| Religious establishment: mosque or church | 75 | 10.3% |
| Community Health Volunteers | 51 | 7.0% |
| SDC clinic | 49 | 6.7% |
| At home (with friends and family) | 32 | 4.4% |
| Community organizations | 2 | 0.3% |
| Ministry of Public Health | 1 | 0.1% |
| School | 1 | 0.1% |
| Total | 729 | |

Three-quarters or more of respondents in each strata said they would feel comfortable seeking psychosocial support (PSS) if it were needed, but between one-half and three-quarters said they would be able to access these services. Syrian, non-IS living in West Bekaa and Rachaya had the lowest access coverage, with 71% feeling comfortable seeking PSS and only 29% saying they would be able to access PSS (Figure 99). The reasons they listed are shown in Table 26, with cost being the leading factor.

Table 26 - Reasons Respondents Don't Feel Comfortable or are Unable to Access Psychosocial Support Services

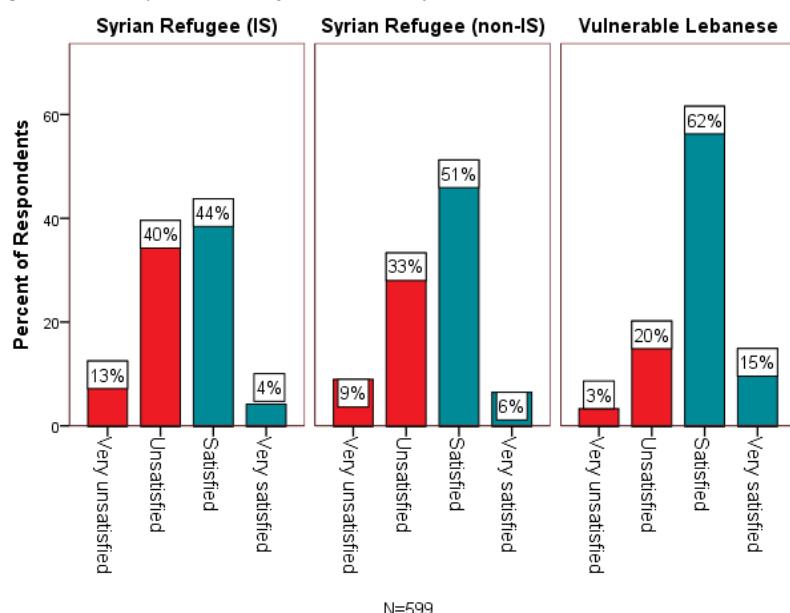
| Obstacle | Percent |
|---|---------------|
| Cost/financial difficulties | 36.3% |
| I don't like or want advice. Prefer to deal with problems alone | 18.3% |
| There are no support services here | 13.3% |
| I don't need those services | 10.7% |
| Distance/transportation | 4.0% |
| I don't know | 3.3% |
| I don't know where it is located | 2.7% |
| Fear (of community perceptions, of medications) | 2.3% |
| Negotiations with husband | 2.3% |
| Family reasons (e.g., can't leave kids alone) | 1.3% |
| I cannot go (no reason specified) | 1.0% |
| Privacy/trust concerns | 1.0% |
| No one is supporting/encouraging me to go | 1.0% |
| These services and medicines do not reduce sadness | 0.7% |
| I don't have time | 0.7% |
| Low quality of care | 0.3% |
| Religious reasons | 0.3% |
| I do not go outside the house | 0.3% |
| Total | 100.0% |

Table 27 - Respondent's care-seeking behavior when feeling sad, stressed, lonely, under pressure or affected by trauma

| Action Taken | Number | Percent |
|--|------------|---------|
| Deal with it on my own | 452 | 75.5% |
| Family, friends or neighbors | 241 | 40.2% |
| Seek help at SDC clinic | 6 | 1.0% |
| Seek help at Health Center | 8 | 1.3% |
| Seek help at NGO clinic | 1 | 0.2% |
| Seek help at Private clinic | 21 | 3.5% |
| Seek help at specialized hospital | 4 | 0.7% |
| Seek help at Community Based Organizations (CBOs) | 1 | 0.2% |
| Seek help at religious institutions: church/mosque | 6 | 1.0% |
| Seek help from CHVs | 4 | 0.7% |
| Total | 599 | |

Eighty percent of respondents across strata affirmed that they had felt sad, stressed, lonely, under pressure or affected by trauma in the past six months. Of those, three-quarters dealt with it on their own and 40% sought assistance from family, friends and neighbors. Respondents could select more than one option. A small proportion of respondents said they sought care at a health facility, with private clinics being the most frequently mentioned type (3.5%). Lebanese were more likely to have gone to a private clinic (6%) than Syrians, non-IS (1.5%). No Syrians, IS, reported going to a private clinic.

Of the 599 respondents that expressed a need for psychosocial support in the past six months, 6.7% were very unsatisfied, 27.7% were unsatisfied, 55.3% were satisfied and 10.4% were very satisfied with the psychosocial support they received. As shown in Figure 100, Lebanese were significantly more likely than Syrian respondents to report they were satisfied or very satisfied. The data also revealed that those who reported being unsatisfied were largely the ones that had dealt with their problems on their own or sought help through family and friends, although 20% of those respondents that went to a private clinic were also dissatisfied with the service. Those that went to any of the other sources listed in Table 27 were either satisfied or very satisfied with the services received.

Figure 100 - Respondent Satisfaction with Psychosocial Services Received in the Past Six Months, by Strata


* Column proportions significantly different at the .05 level, based on z-tests with the Benjamini-Hochberg correction

Only three percent of Syrian respondents and 7% of Lebanese respondents reported paying for psychosocial support services in the past six months (Figure 101), which aligns with the small proportion that went to a health facility for these services. The mean amount paid was higher among vulnerable Lebanese than among Syrians (Figure 102).

Figure 101 - Respondent Payment of Psychosocial Support Services, by Strata

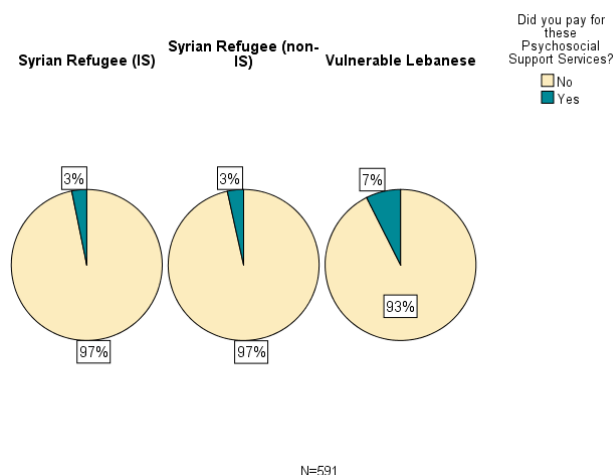
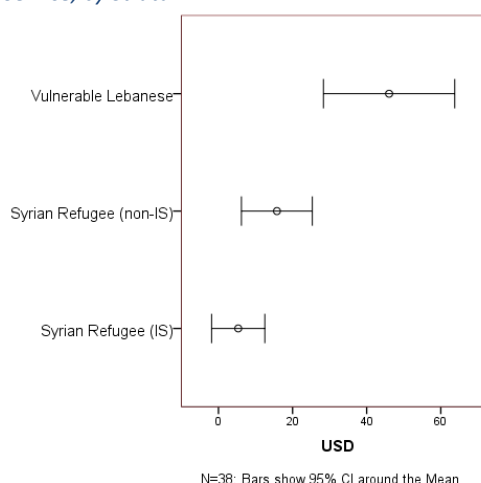


Figure 102 - Mean Payment (USD) for a Psychosocial Support Service, by Strata



Disability in Family Members 5 Years of Age and Older

The histogram in Figure 103 shows that of all respondents, only 26 had at least one family member over age 5 with a disability. Most had only one relative with a disability whereas one Syrian (IS) and one Vulnerable Lebanese household had two disabled family members (Figure 104).

Figure 103 - Histogram of Respondents with Disability in Family Members > Age 5

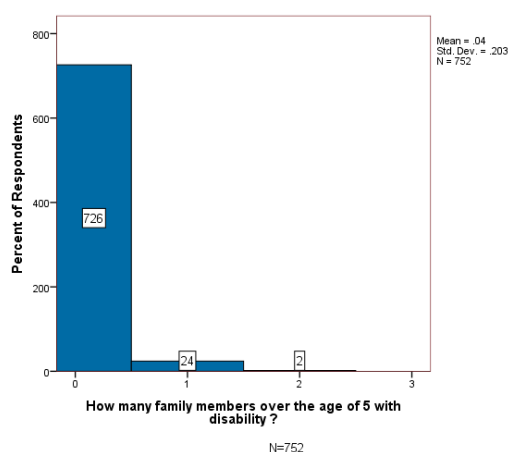


Figure 104 - Number of Family Members Over Age 5 with a Disability, by Strata

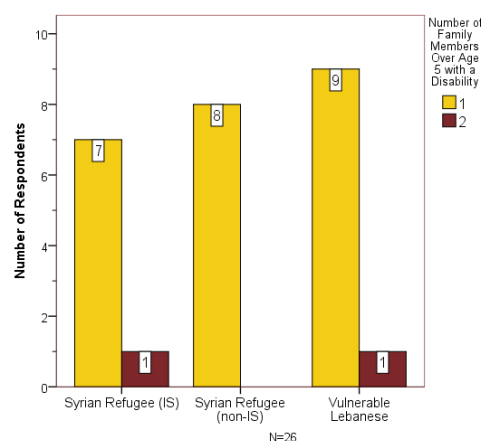
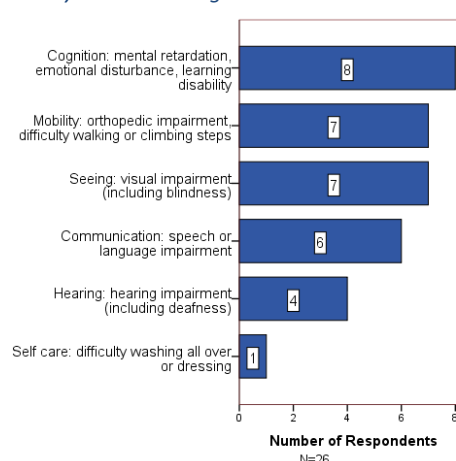


Figure 105 shows the types of disabilities present among these family members while Table 28 lists the number of family members > age 5 with a disability, by type. Cognition, mobility and seeing were the most commonly observed issues in respondents' families, while self-care was reported least often. Because seven of the 26 disabled household members have two disabilities each and the remaining 19 each have one disability, Figure 105 shows a total of 33 disabilities in a sample size of 26 people. Disability in a household member of any age can have resource implications, so Medair Lebanon should consult with SDCs to assure that a screening and referral system is in place not only for health but also for social services that this patient population and their families may need.

Table 28 - Prevalence of Disability in Respondents' Family Members > 5 Years of Age

| Disabilities in Family Members > 5 | Number of Family Members |
|------------------------------------|--------------------------|
| Cognition | 2 |
| Communication | 3 |
| Hearing | 2 |
| Mobility | 5 |
| Seeing | 6 |
| Self-Care | 1 |
| Cognition and Communication | 3 |
| Cognition and Hearing | 1 |
| Cognition and Mobility | 2 |
| Hearing and Seeing | 1 |
| Total | 26 |

Figure 105 - Types of Disability Prevalent Among Respondents' Family Members > Age 5

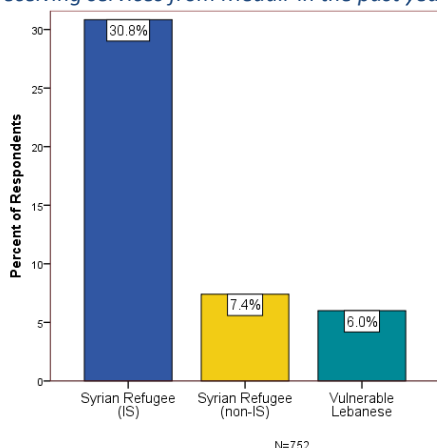


Medair and NGO Services

Medair Lebanon was interested in knowing whether respondents had received Medair Lebanon services the previous year and if not, then what other types of NGO services they had benefited from – knowing that some of those services may have been provided by Medair but perhaps were not prominently branded as such.

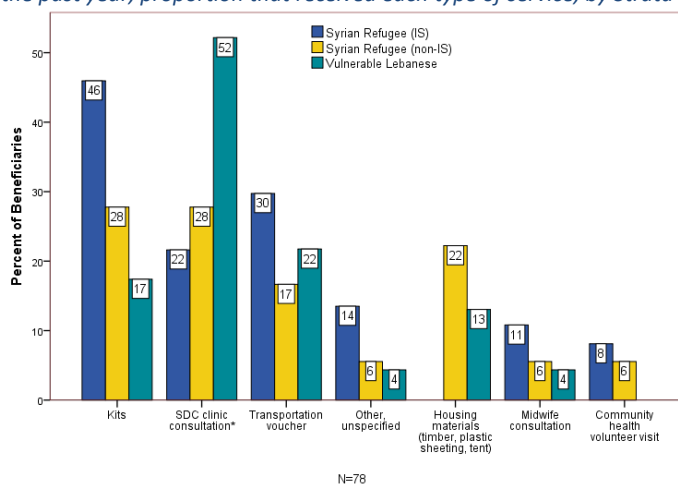
Thirty percent of Syrians, IS, 7.4% of Syrians, non-IS, and 6% of vulnerable Lebanese said they had received Medair Lebanon services within the previous year (Figure 106). Kits, SDC clinic consultations, and transportation vouchers were the most mentioned benefits received by these 78 respondents. Fewer respondents mentioned receiving housing materials or benefiting from CHW visits -- either Community Midwives or Community Health Volunteers (Figure 107). As a reminder, Figure 5 at the beginning of this report showed the Medair benefits received across all strata combined as a proportion of all respondents rather than as a proportion of those reporting having received Medair services.

Figure 106 - Proportion of respondents that reported receiving services from Medair in the past year, by Strata



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

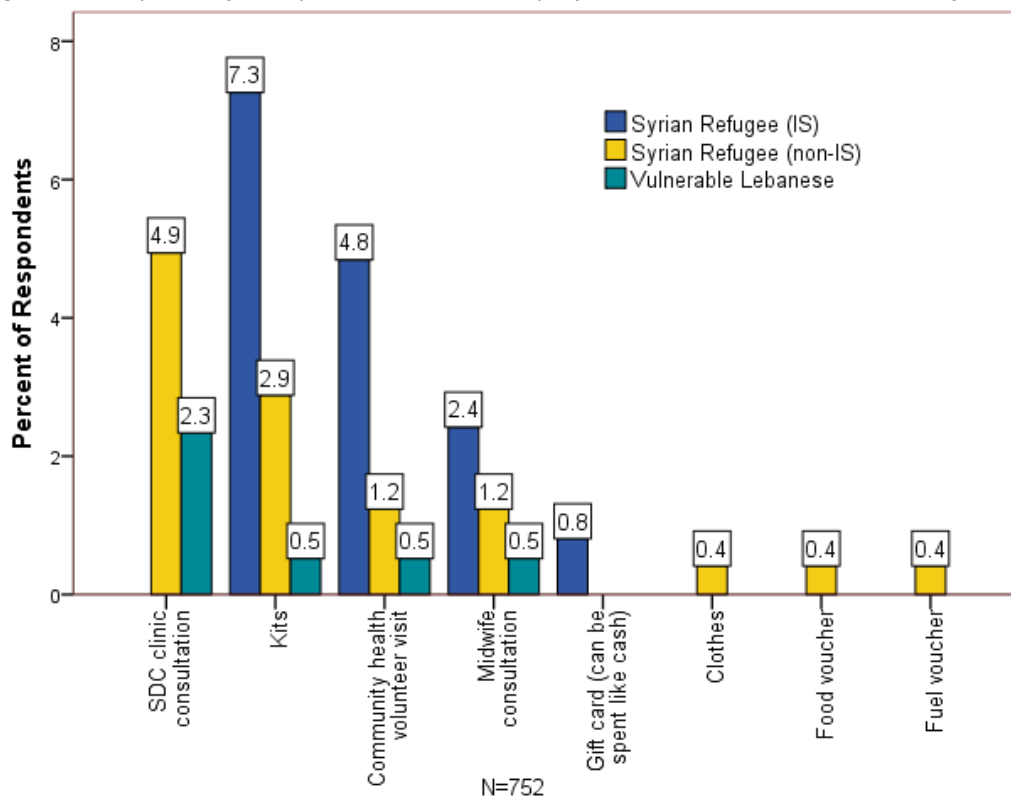
Figure 107 - Among those that reported receiving Medair services in the past year, proportion that received each type of service, by Strata



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

Figure 108 shows the specific services that respondents received but did not attribute to Medair Lebanon. These were asked about as they are common forms of support through Lebanon Crisis Response Plan NGO partners. As before, kits, SDC consultations, and CHW visits were reported as having been received. In addition, respondents said they had benefited from food and fuel vouchers as well as clothes and gift cards that could be spent like cash. While these respondents all reside within the Medair catchment area, these additional services cannot all be attributed to Medair given that other NGOs are working in the Bekaa governorate and may have been the provider of any of these services.

Figure 108 - Proportion of all respondents that received specific services, not mentioned as received from Medair



* Proportions significantly different at a .05 level based on z-tests with Benjamini-Hochberg correction

RECOMMENDATIONS

The health knowledge and behaviors of mothers both on their own and their young children's behalf measured by this survey ultimately reflect the fine balance in a complex web of influences, choices and negotiations in the women's lives, some actions ultimately being voluntary and some determined by factors outside their direct control. Because Syrian and Lebanese women caring for young children in the Bekaa Valley of Lebanon do have some autonomy in choosing how to deal with prevention and treatment of illness in their children, themselves, and their other family members, there is a window of opportunity for population health programs to influence them to make the healthiest decisions for their families.

Within this complex social milieu, the Medair Health Program has been working in both health facilities and at the community level of the Bekaa Valley in an effort to achieve a long list of results, including increasing the use of modern family planning methods to space or stop childbearing, reaching a high level of coverage of antenatal care, delivery in a health facility and postnatal care by a skilled provider, exclusive breastfeeding of infants for six months, appropriate recognition of danger signs in ill children accompanied by timely treatment-seeking behavior by their mothers/caretakers, full coverage of vaccinations, and the reduction of the behavioral and metabolic risk factors for as well as the prevalence of diabetes and cardiovascular disease (NCDs). Like any local health program, Medair has the opportunity to gain the trust and partnership of Syrian and Lebanese families that reside within their catchment population by offering health information, commodities, and services that they want and need on an accessible and affordable basis, all toward the achievement of aligned health goals.

The KPC Survey results presented in this report have illuminated the gaps that remain between desired outcomes of the Medair Health Program and current local knowledge, home health behaviors, and preferences when seeking health information and medical care. Given that these outcomes have contextual as well as direct and indirect predictors, the recommendations for the working to close gaps measured in the KPC Surveys fall into three categories:

1. Medair Role as a Health Partner in the Lebanon Crisis Response Plan
2. Medair Health Program Interventions
3. Medair Health Program M&E

1. Medair Role as a Health Partner in the Lebanon Crisis Response Plan

Medair Lebanon has the ability and responsibility to participate in local, regional and national dialogue regarding the optimal structure and provision of care for Syrian refugees and vulnerable Lebanese in the Bekaa Valley. There are many models used to structure such communications. One is the Health Rankings and Roadmap Action Model shown in Figure 109, which was designed to work at the local county level in the US. As a nongovernmental organization working in both the public health and healthcare circles in this diagram, Medair staff have both direct contact with community members and the platform to interface with funding organizations as well as government - including the Ministry of Public Health and Ministry of Social Affairs, private sector, non-profit, and educational stakeholders of the wider social services sector.

A 2016 report on population health metrics (National Academies of Science, Engineering and Medicine, 2016, p. 6) emphasized that:

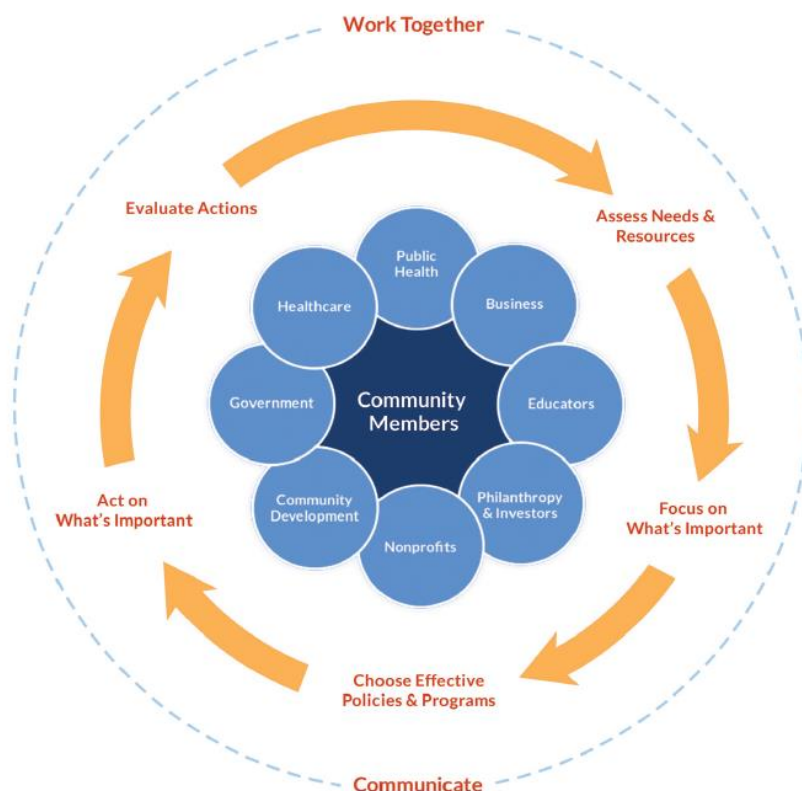
- (a) *the best measures drive action and are linked to interventions*
- (b) *indicators work best in catalyzing population health action in multiple sectors when they reflect collective needs and priorities determined by community stakeholders and have been measured at a human scale, and*
- (c) *the metrics realm requires a shift from data first to purpose first.*

Table 29 - The Results-Based Accountability Steps

| RBA Step | Action Item |
|----------------------------|---|
| Population | Identify the population you will be discussing |
| Result | Identify the specific result |
| Indicator | Identify data points that will measure your progress |
| The Story Behind the Trend | Identify what the indicators say, what the causes and forces are that affect these indicators |
| Key Partnerships | Identify partners with a role to play in turning the curve |
| Steps Toward Action | Identify the five best ideas for Turning the Curve and improving the results |
| Strategies | Identify which strategies are best suited to turning the curve in the areas identified above |

These principles should guide Medair in the communication of its M&E data to stakeholders, optimally following the Results-based Accountability Steps shown in Table 29. In this way, Medair may use its routine monitoring data and the evaluation results of the annual KPC Surveys to orient donors, community teams and healthcare providers on changes in interventions needed either with current resource levels and/or to influence new investments and activities. Sharing the results of this Comparison Report is only one of many continual data sharing opportunities available to Medair in its work as a humanitarian partner in the LCRP.

Figure 109 - Health Rankings and Roadmap Action Model



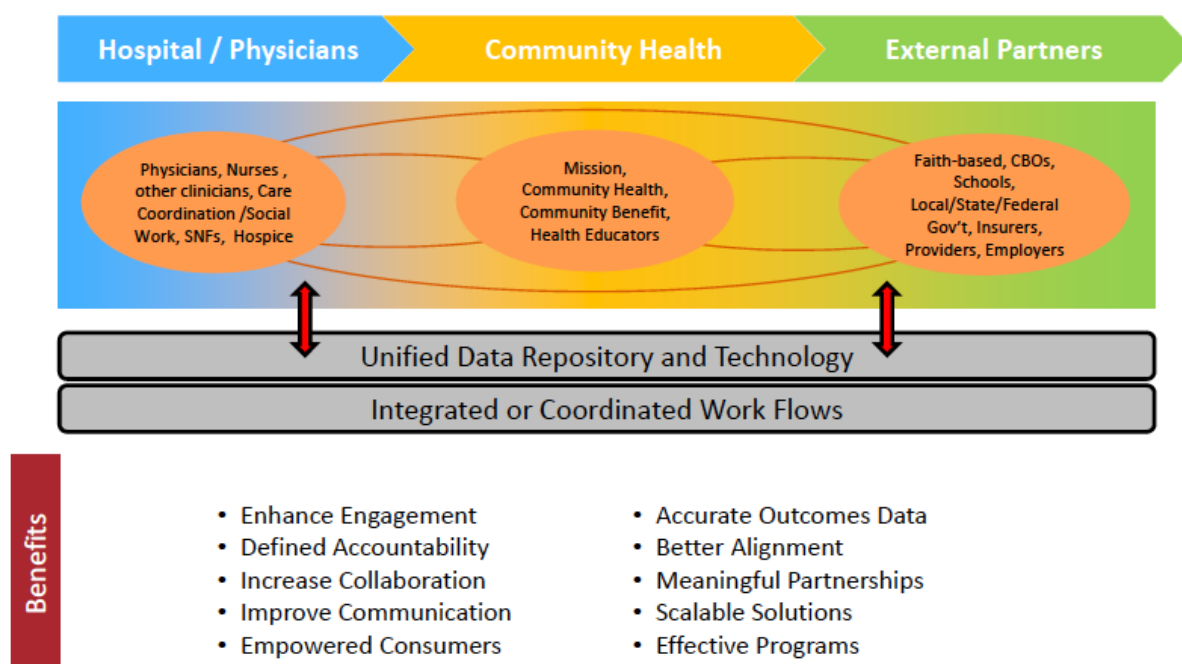
The United Nations High Commission on Refugees (UNHCR) operates an online data portal in Lebanon and many international humanitarian organizations, government agencies and NGOs post documents using this file sharing platform, especially important to coordinate work under the Lebanon Crisis Response Plan (LCRP). For the LCRP Health Sector specifically, Figure 110 would be an aspirational goal, taking partners already working online collaboratively – or that want to start online document and data sharing – and putting their content in a structure that follows the continuum of health care. The specific details for such a population health informatics infrastructure covering the health care provided to the LCRP target population would need to be informed by current providers of primary through tertiary care, community health, external partners such as school health programs, in addition to NGOs and UN agencies providing technical support within the health sector. For example, the World Health Organization 100 Core Health Indicators (WHO, 2015b) measure progress on health status, risk factors, service coverage and health systems. Should some of these be included in an envisioned LCRP health data portal, the definitions would be aligned with international standards yet would need to come from local government, NGO and private sector data sources. Presenting data comparatively and in the context of logic models or some other action-oriented construct is important for the purpose-first goal stated above: “a dashboard aligned with specific targets would... tell a better story to motivate action. Part of putting metrics into context... is stating them in terms of quantiles or rankings, which can also motivate action. Data absent context [does] not motivate most people.” (NASEM, 2016, p. 50).

The health dashboards envisioned should incorporate geographic information systems (GIS):

Data visualization using mapping and geospatial analyses play a significant role in addressing the emerging need for improved spatial investigation at subnational scale through 1) mapping key MNH service provision indicators as well as associated determinants; 2) analyzing geographic access to MNH services, e.g., access to emergency obstetric care (EmOC); and 3) modeling potential actions to identify how best to increase such access to maternal and neonatal health services. (Molla, et al, 2017, p. 2).

A key audience for health data not to be missed is the consumer. In the context of the Bekaa Valley, making the currently available health services and facilities known within the community is important, be it through smartphone apps, SMS to lists obtained through cellular networks, television and/or radio. Printed brochures and directories get outdated and are not distributed to everyone, so use of communication technology that can be updated on changes that occur and be sent to mass audiences, as well as forwarded by individuals to members of their social networks, is important. While they must be financially sustainable, the goals of universal access make it essential for beneficiaries to know what is available at low or no cost and what is billable. For women of reproductive age, reproductive health stands out as an obvious range of services to make accessible, but as we have shown in this report, they largely cohabit with their husband and children and in some cases friends and relatives – all of whom are likely to need these and other services, including child health, attention for NCDs, and psychosocial services. As people become confident and trusting of the healthcare providers in the area, they tend to spread the word as health information brokers. Advertising through social networks is just as important as through more formal means.

Figure 110 - A proposed population health continuum of the future (Source: US National Academies of Sciences, Engineering and Medicine (NASEM) Workshop on Population Health Metrics)



Social and Health Policy Advocacy

The 2011 Busan Partnership for Effective Development Cooperation called for reduced fragmentation and emphasized transparency, results, mutual accountability, and host country leadership. The LCRP can be considered a step in this direction.

The Government of Lebanon (GoL) established an Inter-Ministerial Committee on Displaced as the highest national authority for international partners supporting the crisis response inside Lebanese territory, with the Ministry of Social Affairs (MOISA) mandated to oversee the Government's response to the crisis. The Lebanon Crisis Response Plan (LCRP) is a joint GoL, United Nations and NGO plan to ensure that the humanitarian response to the Syria crisis benefits Lebanon and helps to stabilize the country. It is tailored to respond to the specific needs of Lebanon and vulnerable populations within this ongoing regional crisis and ensures that humanitarian and stabilization interventions are mutually reinforcing to deliver value, and emphasize support to Lebanon's national capacities including its aid and assistance management efforts. In line with the requirements of multi-year planning, the LCRP has now evolved into a four-year strategic framework for 2017-2020. (3RP, 2016, p. 11)

The US Agency for International Development (USAID) has noted that the "ability to provide health care and other basic services is considered a measure of a government's legitimacy" (Gibb and Trostle, 2012, slide 6).

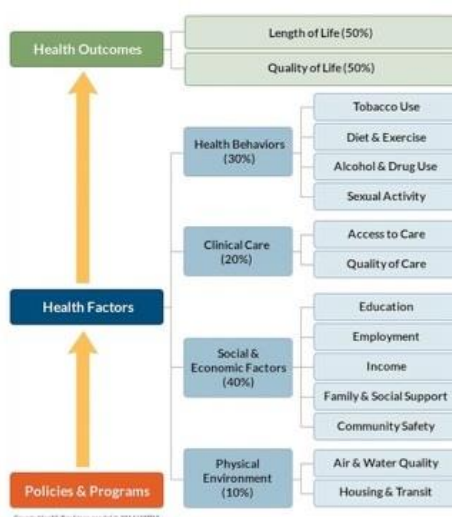
Lebanese are known for routinely declaring "we have no state" when asked why services are poor, or infrastructure is dilapidated, and the current crisis is an opportunity to strengthen state capacity at all levels. The inflow of foreign aid could give the government the ability to strengthen its capacity without the accompanying fiscal strain. (Dahi, p. 2014, p. 13)

Aspirational efforts to design an integrated, equitable, functional, sustainable health system must be adaptive to both today's and to projected future needs. Lebanon has been lauded in recent humanitarian reports for work toward such integration occurring within its national boundaries. The consolidation and expansion of the MoSA Social Development Centers (SDCs) network in Lebanon is considered a project that "maintains or expands equitable and sustainable access to basic services for refugees and host communities, by strengthening and integrating delivery by line ministries at the sub-national level" (3RP, 2016, p. 17). The Multi-Country Economic Opportunities Assessment conducted jointly by the UNDP, ILO and WFP has listed as a promising approach the inclusion of "Syrian refugees and host populations as explicit beneficiaries in the response programming. In Lebanon, programmes run by the Government and NGOs offer the same services to both Syrian refugees and nationals that live in the communities." (3RP, 2016, p. 18).

Many issues of governance exist in Lebanon but as humanitarian aid is now available to address the Syrian refugee crisis, it is a time for public and population health to play a central role. Seeking not only participation of members of the intended beneficiary populations, but emerging leadership from these communities as well, is also a strategy to be explored. Finally, Figure 111 provides

an important reminder that clinical care including the access to and quality of care discussed at length in this report, in general accounts for only 20% or one-fifth of health outcomes. Health behaviors account for nearly one-third, and socio-economic factors such as those described at the beginning of this report comprise nearly 40%, with physical environment (including housing conditions, particularly important to consider with refugee populations), one-tenth. The health sector working in partnership with education, social and economic development, financial and legal systems can be a part of needed transformational change to improve longevity and quality of life in Lebanon for all populations.

Figure 111 - County Health Rankings Model, 2014 (Source: Robert Wood Johnson Foundation and University of Wisconsin Population Health Institute)



Syrian Refugee Legal Registration Options in Lebanon

The legal options for Syrian refugees is changing, and Medair should stay informed about such changes as they may have an impact on Syrian's perceived and actual access to health care at government health facilities, including those MoSA SDCs supported by Medair.

Lebanon tightened its residency policy two years ago, requiring Syrians to pay a hefty \$200 annual fee to maintain legal status in the country. Since then, more than 60 percent of refugees are estimated to have lost their legal status, restricting their ability to move freely for fear of arrest. This has made it much harder for them to work, get healthcare and education, and register births and marriages. The lack of legal status contributes to widespread poverty, a risk of statelessness for the refugees' newborn children, early marriage and barriers that keep 250,000 Syrian children out of school.

For many Syrians in Lebanon, the new fee waiver will be life changing. But it excludes a large part of the refugee population, raising troubling questions as to Lebanon's continued efforts to delegitimize Syrians' claims to refugee status. The order excludes an estimated 500,000 Syrians not registered with UNHCR, the U.N. refugee agency, even though the government directed UNHCR to stop registering Syrians as refugees in May 2015. It also excludes anyone who has used a Lebanese sponsor to maintain legal residency, even though Lebanese General Security officers have required many Syrians to secure sponsors – in contravention of official policies. (Khawaja, 2017)

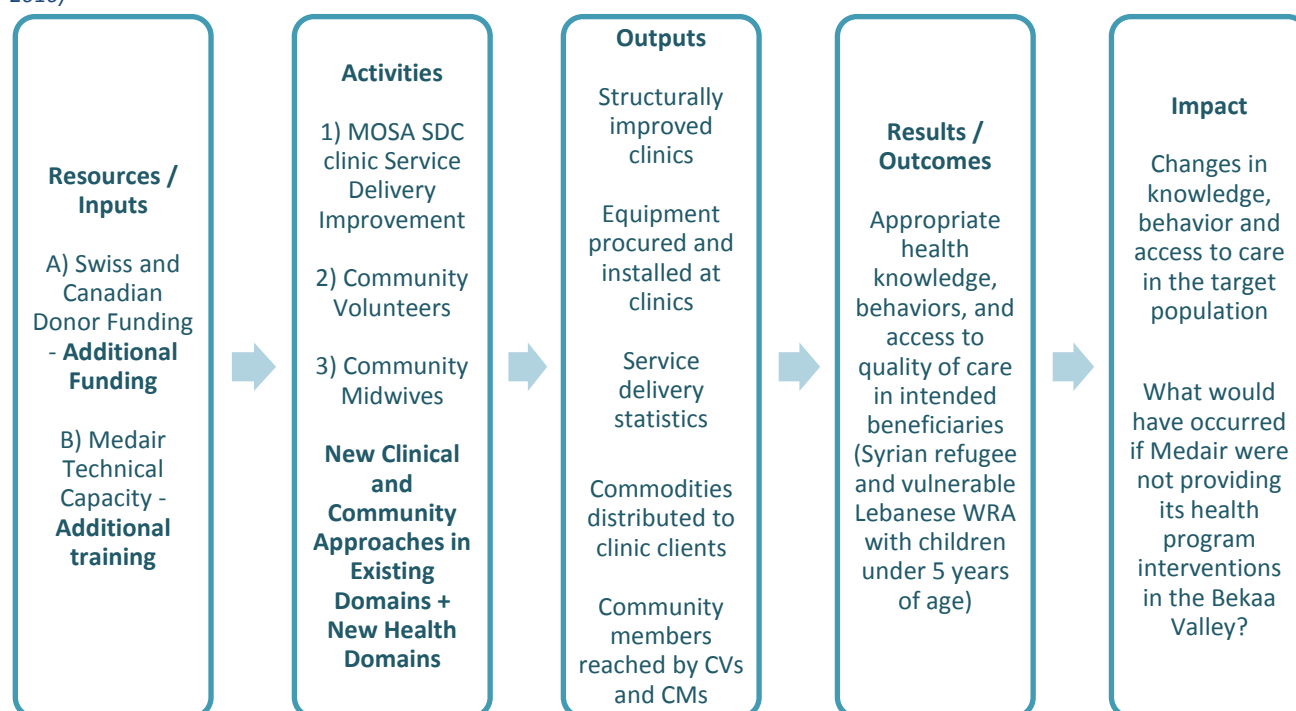
Staying abreast of the potential permanence of Syrians in Lebanon is also important, insofar as the routine needs of this population align with those of the host population:

Major refugee hosting countries must be properly compensated, and not just with money for humanitarian aid, but through a systematic investment in their national economies, in order to boost trade opportunities and create more jobs to benefit both the refugees and local populations alike.... For far too long refugee protection in the major countries of first asylum has focused almost entirely on providing basic physical safety and humanitarian assistance without a meaningful commitment to refugee protection, much less durable solutions. Yet, the data from the Syrian crisis clearly shows us that other rights are equally important if refugees are to establish a life and not feel compelled to flee onwards. These other rights relate to refugees' ability to establish a livelihood, to access basic infrastructures such as health care and the justice system, and to ensure a future for their children through education. It is high time we move beyond the current containment approach and start thinking more thoroughly about refugee protection: How can we create more and faster job and self-reliance opportunities? How can we ensure access to education in a way that refugees can benefit from whether or not they have to stay in the host country or eventually return home? And how do you ensure that refugees are not marginalized in the societies and justice systems of the host countries? (Gammeltoft-Hansen and Tan, 2017, p. 47)

2. Medair Health Program Interventions

The strengths and weaknesses summarized in the Results section above show Medair that the desired outcome of its health activities are not being achieved at the population level within its catchment area. Returning to the logic model framework (Figure 112), Medair must either add inputs and activities or modify those already included in its program in order to influence outcomes and impacts. These fall into the categories of (a) New Approaches in Existing and New Health Domains, (b) Additional Funding and (c) Additional Training.

Figure 112 - Revisiting the Medair Logic Model to Learn from the 2015-16 KPC Comparative Survey Results (Source: Jackson, et al, 2016)



New Approaches within the Same Health Domains

The peer-reviewed literature contains many lessons learned regarding popularized but not always evidence-based approaches. Meta-analysis authors read through the evaluation literature and rate the evidence presented on what works for improving individual and population health. The significant findings in other areas of the world in the health domains important within the Bekaa Valley, Lebanon may be useful and likewise, the data on interventions that work here should be disseminated broadly as others may in turn find them instructive.

Refugee Health

Box 2, from an article recently published in the *Harvard Public Health Review*, lists common issues and recommended interventions for those clinicians working in refugee health settings. They are provided here for potential inclusion in their ongoing service delivery improvement efforts in the Bekaa Valley. The 2016 KPC Survey results showed definite disparities between Syrian and Lebanese subpopulations, and one of the differentiating factors is that the former group are refugees. Given the salience of the social determinants of health, the recommendations from clinicians with experience in refugee health in other countries seem very applicable to the situation in Lebanon. For example, the first item below is on housing stability and family integrity as these can relate to health behaviors. One of the Syrian refugee strata studied in the KPC Survey resides in informal settlements where housing stability is clearly an issue. Also, a subset of respondents don't live with their spouse and many live in extended households which may impact shared responsibility for child and family health.

Box 1 - Recommendations for Refugee Health Care Provision

Family integrity and social adjustments trump medical issues for most arriving refugees.

Intervention: Clinical staff must take a history that includes current housing stability and appropriateness and an awareness of family integrity and safety to understand patient behavior. They should also assist advocating for housing safety when indicated.

Competing demands of distinct services such as: social welfare, education, housing, transportation, public health, mental health, primary care, and specialty care encountered by refugees overwhelm them and tax limited resources.

Intervention: Clinicians or their medical assistants must take a history that includes competing demands and schedule conflicts with therapeutic plans. Active assistance helping families navigate appropriately the varied demands will facilitate the chance of clinical success.

Some refugees with urgent and complex medical conditions are unable to establish care and specialty referrals in a timely manner.

Intervention: Establish clinical connections to fast track sick new arrivals into appropriate clinical settings with available specialty services.

Underdeveloped or eroding health care systems in the countries of origin or first asylum leave many refugees with poorly controlled or undiagnosed chronic medical conditions.

Intervention: Have high clinical suspicion for common chronic conditions immediately in risk populations: diabetes, cardiovascular risk factors, chronic lung disease, hypothyroidism.

Most refugees are unfamiliar with the biomedical practice of preventive medicine and primary health care.

Intervention: Culturally tailored materials and outreach will help identify and explain asymptomatic chronic disease management, disease prevention and health promotion to new arrivals. Also, providers may consider temporarily deferring discussions on prevention and screening until a later point when rapport and credibility has been built up through the attention to symptomatic relief of suffering.

Public health's infectious disease screening for refugees is not communicated to those providing ongoing medical care.

Intervention: Link screening programs to immediate clinical care and do not rely on refugees to communicate the screening information to their clinicians.

Exposure to violence, torture, warfare, and internment is common, even among children

Intervention: Take torture histories, record the relevant details, and integrate them into patient care for affected individuals. Realize that torture trauma has a chronic nature and can recur years after the event.

Loss upon loss is the nature of refugee life and so depression, PTSD, and anxiety are prevalent and often unrecognized.

Intervention: Psychiatric and behavioral medicine services nested within primary care programs are ideal for integrating care, especially since these services may be unfamiliar or stigmatized in many home countries and since mental health problems are very likely to be present.

Anti-immigrant sentiments further burden refugee life in the [receiving country].

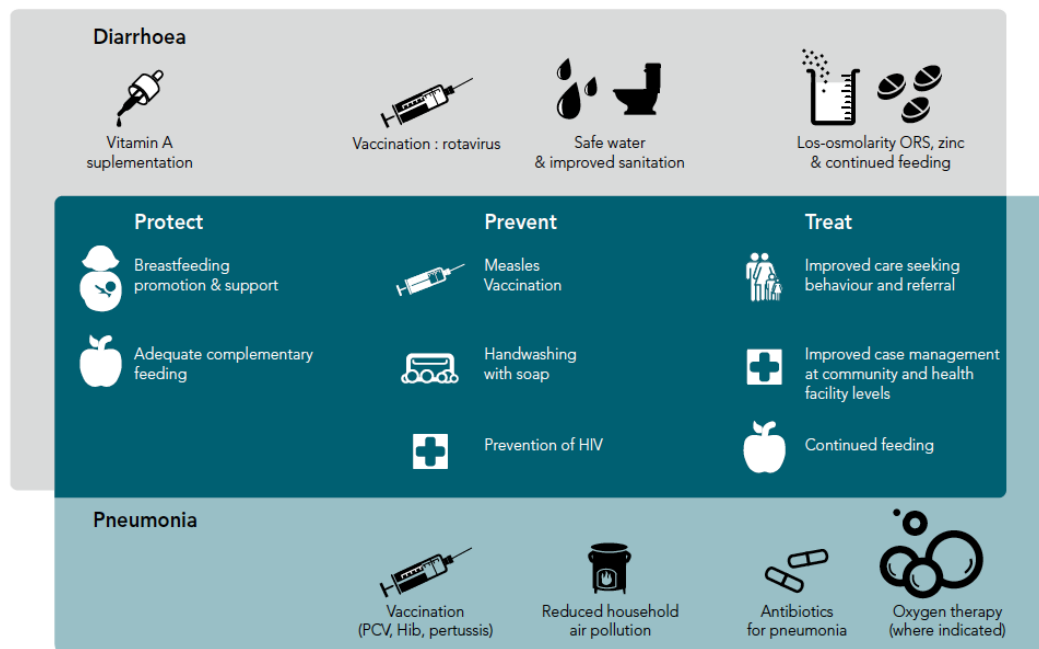
Intervention: Be aware that anti-Muslim and anti-immigrant attitudes impact patient health and behaviors. Their experience must be elicited to be addressed. Identify safety strategies for patients, for example establishing phone trees, learning how to dial 911 and preparing emergency contact information. Identify advocacy programs that can support targeted communities.

Child Health

Diarrhea

Figure 113 shows the commonalities and differences in the interventions for diarrhea and pneumonia. While Medair CHWs and SDCs already promote or directly provide some of these, all should be discussed in terms of adding new health messages to the patient education provided on home visits and at SDC consultations.

Figure 113 - Complementarity of Pneumonia and Diarrhea Interventions (Source: WHO and UNICEF, 2013, p. 14)



Suspected Pneumonia (Acute Respiratory Illness)

Focusing on ARI/suspected pneumonia, Figure 114 shows potential intervention areas some of which were not in the previous figure. The guidelines for Medair CHWs and providers at SDCs could be reviewed to assure they cover all of these areas.

Figure 114 - Potential intervention areas for reducing pneumonia morbidity or mortality among under-5-year-olds (Source: Kirkwood, et al, 1998, p. 795)

| | | |
|---|---|---|
| Immunization INCREASED COVERAGE Measles Pertussis NEW VACCINES Pneumococcus H. influenzae B Respiratory syncytial virus Other viral vaccines | Improving nutrition Breast-feeding Low birth weight Malnutrition Vitamin A Severe anaemia Other micronutrients (zinc, copper, vitamin D) | Reducing environmental pollution Indoor air pollution Environmental tobacco smoke Outdoor air pollution |
| Case management and chemoprophylaxis Severely malnourished children High risk neonates Acute upper respiratory infection Helminths Wheezing | Reducing transmission of pathogens Crowding Direct transmission HIV | Improving childcare practices Care-seeking Avoiding chilling Other childcare practices Maternal education Child spacing |

WHO 95396

Vaccinations

A recent Cochrane Review summarizes the evidence (some strong and some weak) behind interventions currently being used internationally to try to increase childhood immunization rates. Of those listed in Table 30, the Medair Health Program carries out both facility and community-based education, yet only conducts CHW and Community Midwife visits to informal settlements, not home visits to the Syrian refugee and vulnerable Lebanese populations living in general community housing. Medair and other LCRP partners can look to the other program activities listed in this table to consider expanding their work in evidence-based practices within the immunization domain.

Table 30 - Cochrane Review results on evidence-based interventions for immunization coverage (Source: Oyo-Ita, et al, 2016)

| Intervention to Increase Immunization | Evidence of effectiveness |
|---|---|
| Community-based health education | Probably increases DTP3 coverage (moderate evidence) |
| Facility-based health education and redesigned vaccination cards | May increase DTP3 coverage (low evidence) |
| Household monetary incentives | Little or no effect on DTP3 coverage (low evidence) |
| Regular immunization outreach sessions | May improve full immunization coverage (low evidence) |
| Household monetary incentives + Regular immunization outreach | May substantially improve full immunization coverage |
| Home visits to identify non-vaccinated children and refer to clinics | May improve uptake of three doses of oral polio vaccine |
| Supportive supervision | |
| Information campaigns | |
| Integration of immunization services with intermittent preventive treatment of malaria (IPT). | May improve DTP3 coverage (low-certainty evidence) |

Reproductive Health: Antenatal Care and Family Planning/Child Spacing

A WHO publication (2013, p. 38) reported that “a randomized controlled trial (RCT) in Egypt demonstrated increased adoption of postpartum family planning (PPFP) in the immediate postpartum period and within 3 months as a result of an antenatal education intervention.” The KPC Survey revealed high rates of ANC coverage yet lower than desired rates of modern contraceptive use. Counseling on PPFP may or may not have been included in the ANC visits for Syrian refugees and vulnerable Lebanese, so quality assurance in this area is important given the evidence that this can be effective. The Cochrane Review website and online peer-reviewed journals offer a plethora of systematic evidence review articles across health domains.

Family Health: Non-Communicable Diseases

Table 31 lists potential areas of NCD control intervention by both the facility and community-based components of the Medair Health Program, classified into the categories of primary, secondary, or tertiary prevention as well as monitoring.

Table 31 - Potential Areas of Medair Intervention for NCD Control in the Bekaa Valley (Source of Primary through Tertiary definitions: Government of Hong Kong Special Administrative Region, Department of Health, 2017, pp. 12, 13, 15)

| Level of Intervention | Definitions | Medair Health Program Components |
|-----------------------|--|---|
| Primary | Primary prevention is concerned with measures that prevent the onset of disease. Some of the important strategies under this category include health education, immunisation, environmental measures and social policy. The ultimate goal is to bring about a change in behavior or factors affecting individuals so that diseases will be prevented from developing. This approach has contributed to some notable examples of successful intervention in public health especially those related to NCD. | Health promotion to all households visited by CHWs Patient education at Medair-supported SDCs |
| Secondary | Secondary prevention refers to stopping the progression of a disease after its occurrence, by early detection and diagnosis followed by prompt and effective treatment. The prevention of relapse or recurrence of disease conditions through intervention or attention to lifestyle improvement measures, e.g. smokers to quit smoking after a heart attack is also grouped under this category. Screening, which is one form of secondary prevention, has been more accepted by the general public as a means to "prevent" diseases in recent years. | CHW referral of all households visited to health facilities for screening Routine diabetes and hypertension screening, diagnostic follow-up and treatment at Medair-supported SDCs |
| Tertiary | Tertiary prevention refers to the rehabilitation of patients with an established disease to minimise residual disabilities and complications and maximise potential years of enjoyable life, thereby improving the quality of life even if the disease itself cannot be cured. | CHW referral of people with existing NCDs to health facilities for treatment and case management Routine treatment and case management of NCDs by Medair-supported SDCs |
| Monitoring | Routine data collection, analysis and use | At Medair-supported SDCs, track aggregate statistics on incidence and prevalence of NCDs within the clinic population, the percentage prescribed treatment, and the proportion whose clinical findings show that their NCD is under control. If feasible, in future surveys, measure prevalence, awareness, treatment and control of NCDs |

Addition of New Health Domains

The comparative results of the KPC Survey in light of the socio-economic situation of the Syrian refugees in the Bekaa governorate leave questions regarding coverage of areas of potential need that aren't currently prioritized by Medair but are important to both refugee and host community health. These are Occupational Health and both Pediatric and Adult Dental Care.

Occupational Health

Syrian migrant workers in Lebanon have been observed to take employment such as "construction workers, shop assistants, odd jobs men, removal workers, roadway signage installers, and painters" (Proudfoot, 2016). The same anthropological research indicated that workers seemed to ubiquitously have smartphones. An obvious area of intervention would be to start addressing occupational health as a new focus area including assurance of use of protective clothing and proper safety equipment, injury surveillance.

Childhood Injuries

Hill and Liu reported that injury is a leading and increasing cause of death in children under five. Vital statistics departments have cause-specific mortality and hospital emergency rooms keep case reports. A review of these could assist Medair in the design of health education and prevention activities targeting both parents and domestic assistants that may be caring for young children in the family's home.

Dental Care

Children under 5 are focused on in the KPC Survey but dental care is not mentioned. Every infant should receive an oral health risk assessment from his/her primary health care provider or qualified health care professional by six months of age. Parents should establish a dental home for infants by 12 months of age (AAPD, 2014, p. 147). Advice should include the relationship between breastfeeding, bottle feeding and the risk of early childhood caries (ECC):

Human breast milk is uniquely superior in providing the best possible nutrition to infants and has not been epidemiologically associated with caries. Frequent night time bottle feeding with milk and ad libitum breastfeeding are associated with, but not consistently implicated in, ECC. Breastfeeding greater than seven times daily after 12 months of age is associated with increased risk for ECC. Night time bottle feeding with juice, repeated use of a sippy or no-spill cup, and frequent in between meal consumption of sugar-containing snacks or drinks (e.g., juice, formula, soda) increase the risk of caries. High sugar dietary practices appear to be established early, by 12 months of age, and are maintained throughout early childhood. The American Academy of Pediatrics has recommended children one through six years of age consume no more than four to six ounces of fruit juice per day, from a cup (i.e., not a bottle or covered cup) and as part of a meal or snack. (AAPD, pp. 147-8)

Linkages to Other Sources of Direct Support in the Community

In the US-based social services, the "no wrong door" approach is often used. There should be no missed opportunity for referral to needed social services when a family or individual comes to an SDC for medical care. Referrals to medical specialists are often a given, but referrals to housing and other socio-economic benefits are also key as patients may present with multiple needs. In fact, SDCs are already seen as places where people in Lebanon can go for government program registration and benefits. Participants at a health metrics workshop in the US discussed:

the idea of counting support of stable housing as a community benefit for hospital reporting purposes...the key [being] the wealth of research-based evidence showing that stable housing has a beneficial impact on health, [and further recommending that health programs] look for those places where there is evidence of a connection between a social and environmental condition, health status, and health care seeking behavior. (NASEM, 2016, pp.51-2)

Additional Training

In addition to reviewing CHW and SDC clinical training content for the inclusion of key messages such as those listed in the intervention recommendations for each health domain, Medair could incorporate cultural sensitivity and stigma and discrimination modules into healthcare provider training.

The overwhelming proportion of Syrian refugees who are youths is alarming to Lebanese government representatives and local municipalities. Male youths who are in their teenage years are often framed as threats to society, especially if they are not working or in school... The knowledge that almost all Syrian men in their twenties have gone through mandatory military training further complicates their status in Lebanese society. (IDRC, 2016, p. 7)

Finally, the Forum on Investing in Children Globally (iYCG) has promoted "a transformative shift from understanding children and women solely as vulnerable populations to agents of change." (NASEM, 2016, p. 3). This can also be said of refugee populations and the local Lebanese in difficult socio-economic situations. The more that the intended beneficiaries of social investments are involved in decisions regarding their design, the more they will be empowered and integrated members of the local community. As the Forum workshop proceedings state: "it is important to focus on community-centered approaches that promote independence, dignity, self-esteem, satisfaction, and ownership, and which are ultimately sustainable (NASEM, 2016, p. 7).

3. Medair Health Program Monitoring & Evaluation (M&E)

The recommendations in this section are for the targeted use of data and evidence-based practices to improve current Medair Health Program interventions and the overall quality of care provided to both Syrian refugees and vulnerable Lebanese host populations in the Medair catchment area.

Health Facility Assessments

Yusuf (2017) prompts us to recall that both facility- and community-based assessments provide data useful to public health evaluations. While the results shown in this comparison report are indicative of needed improvements in order to meet Medair Health Program goals, they will best be complemented with facility assessment data% in order to provide a complete picture of current gaps.

Table 32 - Quality Checklist for IMCI Facility Assessment (Source: Arifeen, et al, 2009, p. 398)

| | |
|--|---|
| Health facility readiness | Health facilities with at least 60% of workers managing children trained in IMCI |
| | Health facility received at least one supervisory visit that included observation of case management during previous 6 months |
| | Index of availability of essential oral treatments (range 0-100) |
| Assessment of sick child | Child checked for three danger signs |
| | Child checked for the presence of cough, diarrhea and fever |
| | Child weight checked against a growth chart |
| | Child <2 years assessed for feeding practices |
| | Child checked for other problems |
| | Child with very low weight assessed for feeding problems |
| | Index of integrated assessment (range 0-100) |
| Classification of sick child | Child correctly classified |
| | Child with very low weight correctly classified |
| Treatment of sick child | Child with pneumonia correctly treated |
| | Child with dehydration correctly treated |
| | Child with anaemia correctly treated |
| | Child needing an oral antibiotic prescribed the drug correctly |
| | Child not needing antibiotic leaves facility without antibiotic |
| | Child receives first dose of treatment at facility |
| | Child needing referral was referred |
| Advice and counseling given to caretaker of sick child | Caretaker of sick child was advised to give extra fluids and continue feeding |
| | Child prescribed oral medication whose caretaker was advised on how to administer the treatment |
| | Sick child whose caretaker was advised on when to return immediately |
| | Child with very low weight whose caretaker received correct counseling |
| | Caretaker of child who is prescribed ORS and/or an oral antibiotic knows how to give the treatment |
| Correct management | Priority illness |
| | Non-priority illness |
| | All illness |

Table 32 provides a checklist of items that were assessed in Bangladesh following international IMCI facility survey guidelines. Reading through the list, one is reminded that while the 2015-16 KPC Surveys in Lebanon measured whether mothers were going to health facilities for themselves and their children when medical attention was needed, only assessments at the facility-level can assure the program that these families are getting quality care once they arrive.

Beyond IMCI, additional checklists are needed across health domains. NGOs and university programs working on health issues are good sources of checklists, and the peer-reviewed literature lists evidence-based practices that implementers should assure are incorporated both into commodities and performance checklists for use at the appropriate levels of health facilities.

Root Cause Analysis

While Medair is advised to use root cause analysis as a method to further investigate the reasons for gaps between current and targeted indicator levels in all of the health domains in this survey, a specialized WHO tool that can be applied to immunization coverage is discussed here.

Vaccinations

While the analysis in the Results section above pinpointed issues of immunization access and utilization among specific subgroups (strata and districts), the M&E and Health teams will benefit from taking this a step further in a root cause analysis. Table 33 lists scenarios and possible root causes of such issues posited by WHO that may or may not be occurring in the Medair catchment area. Local discussions with community members, clinic staff and supervisors will lead to the list of locally relevant causes of the access and utilization issues in the Bekaa and Baalbek/El Hermel governorates described above in this report, which in turn should lead to the implementation of an action plan for their resolution.

Table 33 - Identifying Specific Immunization Utilization and Access Problems (Source: WHO, 2002, p. 40)

| Problems | Possible causes of problems |
|---|---|
| Parents do not bring children in for additional immunizations (utilization problem) | Health workers have not clearly explained to parents what vaccinations are due, when they are needed Health workers do not understand what vaccinations are due, when they are due and why they are needed Barriers discourage parental return, eg hours of clinic operations, cost, long waits Health workers do not clearly explain to parents when vaccinations are administered at the clinic Health workers have not shown parents respect or conveyed an interest in the child's health |
| Children and mothers are not immunized when coming to the clinic for sick visits (utilization problem) | Health workers forget to check records or ask about what vaccines and doses a child/mother has received Health workers do not understand the contraindications for immunizations or health workers do not understand that immunizations may be given to a mildly ill child Health workers fail to explain to parents that it is often acceptable to immunize a mildly ill child Immunizations are not available on that day Immunization supplies are not available |
| Health workers cannot determine what immunizations a child has received (utilization problem) | Health workers forget to remind parents to bring the immunization card Clinic records are not organized so that it is easy to find a child's records |
| Pregnant women do not seek immunization for tetanus (utilization problem) | Health workers failed to use every contact with women of childbearing age to explain the need for, and importance of tetanus toxoid immunization (particularly when they bring their children to get immunized) Barriers discourage women from seeking immunization, eg cost, gender and cultural issues |
| Children are not receiving all vaccines that they are eligible to receive during a visit (utilization problem) | Health workers do not understand what vaccinations are due, when they are due and why they are needed All immunizations are not available or offered at the clinic on the same day Supplies of some immunizations are not sufficient |
| Children and pregnant women never come to the clinic to begin immunization (access problem) | The clinic is located too far away Clinic hours are not convenient or are not understood by the community Outreach activities are too infrequent, or their timing is not understood Cultural, financial, racial, gender or other barriers are preventing use of immunization services |

Future Waves of the KPC Survey

A detailed analysis plan should be reviewed with stakeholders both within and outside Medair prior to the 2017 KPC household survey in order to assure that the sampling methodology and intended statistical tests will assist in answering all Medair program evaluation questions as well as serve as a baseline for intended activities in the following year that may at the least involve a geographical expansion of the current three Medair interventions but potentially include an expanded target population (by gender and age group), interventions in additional health domains, and the activities of other donors and implementing partners.

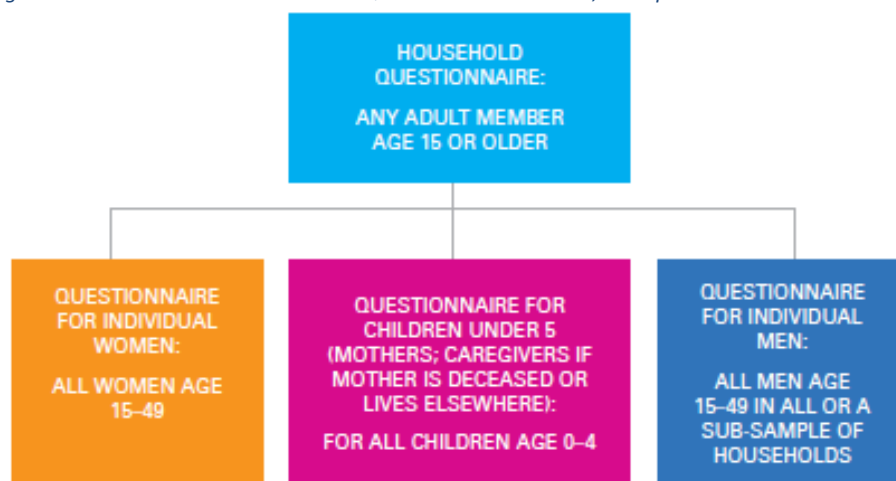
The discussion below highlights revision recommendations for each section of the KPC Survey household questionnaire.

Respondents

The UNICEF Multiple Indicator Cluster Surveys began to include a separate questionnaire module for individual men in the household in MICS4, which was conducted between 2009 and 2012 and continued to use it in the MICS5 surveys conducted between 2012 and 2015 (UNICEF, 2015) - see-Figure 115. The non-inclusion of men and other adult household members that may have a role in child,

reproductive and family health decisions has been noted as a limitation in the current KPC Survey. In addition, separate questionnaires for each child, e.g., expanding the Child Info section of the current KPC Survey questionnaire, would provide more statistical power for calculations that are now based on the youngest or most-recent born child. Asking for information regarding children born many years ago may inflate recall bias, however, a consideration that should play a role in this decision. By examining the adaptability of the MICS5 model to this Bekaa Valley setting, Medair may be able to reduce some of the KPC Survey's present limitations, e.g., the ability to get demographics as well as childhood immunization, child illness, NCD and exposure to Medair services data for each person in the household for more robust estimates (larger sample sizes for each indicator).

Figure 115 - Household and Individual Questionnaire Structure, Multiple Indicator Cluster Survey, MICS5



Improvements to the KPC Survey questionnaire include: (1) streamlining of questions, as cross-validation of data when the same information was inquired about in more than one questionnaire item yielded contradictory rather than aligned responses; (2) new questions incorporating knowledge gained by others doing household surveys.

The National Academies of Science, Engineering and Medicine 2016 report on population health metrics noted that the current “proliferation of metrics creates confusion” (NASEM, 2016, p. 6). The further development and field deployment of the Medair KPC Survey in future years must consider the internal comparability of indicators measured in 2015, 2016 and later years of the planned longitudinal survey as well as their external comparability to international metrics sets in the maternal and child health realms.

Child Health - Suspected Pneumonia

Box 2 provides the inclusion criteria for a child to be categorized as having suspected pneumonia, which as the leading cause of death in children under age 5, is important to distinguish. The KPC Survey questionnaire does not currently ask question 3 in the following set, which is based on standard child survival surveys.

Box 2 - Standard Household Survey Questions on the Prevalence of Suspected Pneumonia (Source: Noordam, et al, 2015)

The following questions (similar in DHS and MICS) were used for the analysis:

1. Has (NAME) had an illness with a cough at any time in the last 2 weeks? (Yes/ No/ Don't know)
2. When (NAME) had an illness with a cough, did he/she breathe faster than usual with short, rapid breaths or have difficulty breathing? (Yes/ No/ Don't know)
3. Was the fast or difficult breathing due to a problem in the chest or to a blocked or runny nose? (Problem in chest only/ Blocked or runny nose only/ Both/ Other (*specify*)/ Don't know)
4. Did you seek advice or treatment for the illness from any source? (Yes/ No/ Don't know)
5. A. Where did you seek advice or treatment? B. Anywhere else? (Various services which fall under the following categories: Public sector, Private sector, Other sources and Other (*specify*))

In order to be included in this analysis, the respondent had to answer “yes” to questions 1, 2 and 4, and ‘a problem in the chest’ to question 3. Multiple answers were possible for question 5 (sections A and B) DHS and MICS programs work closely together to harmonize tools and methods to enable comparisons of key indicators across countries and over time.

Reproductive Health

Family Planning/Child Spacing

As in the DHS and PAPFAM Surveys, along with questions on current method use, currently married women should be asked “whether they would like to have another child, as there is abundant evidence that this item yields the most valid and reliable information on fertility desires” (Casterline, 2011, p. 6). It will make possible the cross-tabulation of current method use with desire

for additional children to assess the rationality of contraceptive choices in light of known availability of (although accessibility is more complex) modern methods throughout Lebanon.

Medair should revise the FP/CS module questions to assure that Medair can calculate the WHO Core Indicator: Demand for FP Satisfied with Modern Methods (WHO, 2015, p. 74). This is defined in the FP2020 Core Indicator Table (Track20, 2015) as the:

percentage of women (or their partners) who desire either to have no additional children or to postpone the next child and who are currently using a modern contraceptive method. Women using a traditional method are assumed to have an unmet need for modern contraception.

The KPC Survey does not currently ask the questions about fertility desire that would be required in order to assess met or unmet demand for FP. DHS, MICS, PMA2020 and RHS have questionnaire modules that should be researched and appropriate questions added to the 2017 KPC Survey. The questions needed for the calculation of Unmet Need are listed in the Results section of this report.

Postnatal Care

Include the current PNC indicator in both the WHO 100 Core Health Indicator set (WHO, 2015) and the Commission on Information and Accountability for Women's and Children's Health list of eight priority coverage indicators:

Percent of mothers and babies who received postnatal care within two days of childbirth (regardless of place of delivery).

Up until 2006, DHS employed an assumption that most women who deliver in an institution will receive some type of postnatal care before discharge and this may well have resulted in over-estimation. It was also assumed that women could not know if their baby received a postnatal check, so questions on postnatal care for babies were only asked for home births. DHS as well as MICS have been modified to collect information on postnatal care for all women regardless of place of delivery, as well as whether or not their babies received a postnatal health check regardless of place of birth. In addition, there are now questions on the provider, timing, and location of postnatal care. As with all reporting in household surveys, responses to questions about postnatal care are subject to recall bias regarding timing and content or to misinterpretation, for example, regarding the cadre of health provider. (Countdown to 2015 and Health Metrics Network, 2011, p. 34).

Unfortunately, there were consistency issues with the self-reported data on postnatal care received by respondents in both the 2015 and 2016 KPC surveys. Table 18 shows that the women gave different responses as to whether they received postnatal care within two weeks of their most recent delivery depending on the question:

- V221: "Did a health care provider or trained traditional birth attendant check on your health within 2 weeks after the delivery of your youngest child?"
- V234: "When did your first postpartum check take place?"

Clearly if a woman said "yes" to V221, their response to V234 should be either "Within 6 days" or "7-13 days". However, 150 women responded "Yes" to V221 and "14 or more days" to V234. Given the contradictory responses, we cannot know which represents the accurate timing of first PNC visit. Nonetheless, graphs have been provided in the PNC section of all KPC reports for readers' contemplation.

Furthermore, while we may wish assume that all clinically recommended PNC activities were completed between 6-12 hours after delivery following facility births, only facility-based assessments or more descriptive future survey questions listing these items can provide quality assurance in this realm. Additionally, the PNC questions were already misaligned between 2015 and 2016, so a revamping of this module of questions for future waves of the survey is advised to assure comparability with past years and to incorporate the activities performed during PNC and not just the timing.

Table 34 - Contradictory Responses on Timing of First Postnatal Care Visit after Most Recent Delivery

| | | 2015 | | | | 2016 | | | |
|---|-----------------|--|------------|-------|------------|--|------------|-------|------------|
| | | V221: Did a health care provider or trained traditional birth attendant check on your health within 2 weeks after the delivery of your youngest child? | | | | V221: Did a health care provider or trained traditional birth attendant check on your health within 2 weeks after the delivery of your youngest child? | | | |
| | | No | | Yes | | No | | Yes | |
| | | Count | Column N % | Count | Column N % | Count | Column N % | Count | Column N % |
| V234: When did your first postnatal check take place? | Within 6 days | | | 63 | 33.2% | | | 83 | 27.9% |
| | 7-13 days | | | 81 | 42.6% | | | 110 | 36.9% |
| | 14 or more days | | | 46 | 24.2% | | | 105 | 35.2% |
| | Total | | | 190 | 100.0% | | | 298 | 100.0% |

ACTION PLAN FOR DISSEMINATION OF RESULTS

Medair plans to publish this report on the Medair website and share with internal staff health working groups. Externally, Medair plans to present key findings from the report and offer copies to LCRP partners working in the Bekaa governorate at regularly scheduled Health Sector meetings that take place with MoPH, international agency (including UNHCR) and NGO staff in attendance. Finally, the American University of Beirut, which launched the Commission on Syria with The Lancet in 2016 calling for additional health assessments, may be approached regarding their interest in seeing a presentation of key findings and any potential collaboration, including the publication of these results, with that Commission.

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ANNEX A. MEANS AND CONFIDENCE INTERVALS FOR SELECTED VARIABLES

Demographics - Household Size

| Strata | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|-------------------------|-----|------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| Syrian Refugee (IS) | 124 | 7.21 | 3.379 | .303 | 6.61 | 7.81 | 2 | 21 |
| Syrian Refugee (non-IS) | 242 | 6.26 | 3.055 | .196 | 5.87 | 6.65 | 2 | 27 |
| Vulnerable Lebanese | 384 | 5.55 | 2.280 | .116 | 5.32 | 5.78 | 2 | 18 |
| Total | 750 | 6.05 | 2.811 | .103 | 5.85 | 6.25 | 2 | 27 |

| District | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|----------------------|-----|------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| Baalbek | 186 | 6.10 | 2.745 | .201 | 5.70 | 6.49 | 2 | 18 |
| West Bekaa & Rachaya | 132 | 5.63 | 2.286 | .199 | 5.24 | 6.02 | 2 | 15 |
| Zahle | 432 | 6.16 | 2.973 | .143 | 5.88 | 6.44 | 2 | 27 |
| Total | 750 | 6.05 | 2.811 | .103 | 5.85 | 6.25 | 2 | 27 |

Health Behaviors - Breastfeeding

For how many months did you breastfeed your child?

| Strata | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|-------------------------|-----|-------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| Syrian Refugee (IS) | 28 | 10.64 | 6.142 | 1.161 | 8.26 | 13.02 | 1 | 20 |
| Syrian Refugee (non-IS) | 57 | 9.56 | 6.478 | .858 | 7.84 | 11.28 | 0 | 23 |
| Vulnerable Lebanese | 86 | 4.98 | 4.622 | .498 | 3.99 | 5.97 | 0 | 20 |
| Total | 171 | 7.43 | 6.063 | .464 | 6.52 | 8.35 | 0 | 23 |

| District | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|----------------------|-----|------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| Baalbek | 43 | 6.63 | 6.253 | .954 | 4.70 | 8.55 | 0 | 20 |
| West Bekaa & Rachaya | 36 | 8.31 | 6.807 | 1.134 | 6.00 | 10.61 | 0 | 23 |
| Zahle | 92 | 7.47 | 5.675 | .592 | 6.29 | 8.64 | 0 | 20 |
| Total | 171 | 7.43 | 6.063 | .464 | 6.52 | 8.35 | 0 | 23 |

Service Delivery Coverage - Antenatal Care

During your pregnancy with your youngest child, how many months pregnant were you when you first received antenatal care?

| Strata | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|-------------------------|-----|------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| Syrian Refugee (IS) | 112 | 2.78 | 1.897 | .179 | 2.42 | 3.13 | 1 | 9 |
| Syrian Refugee (non-IS) | 204 | 2.54 | 1.804 | .126 | 2.30 | 2.79 | 1 | 9 |
| Vulnerable Lebanese | 348 | 1.75 | 1.264 | .068 | 1.62 | 1.89 | 1 | 8 |
| Total | 664 | 2.17 | 1.622 | .063 | 2.05 | 2.29 | 1 | 9 |

| District | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|----------------------|-----|------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| Baalbek | 165 | 2.03 | 1.420 | .111 | 1.81 | 2.25 | 1 | 8 |
| West Bekaa & Rachaya | 116 | 2.11 | 1.467 | .136 | 1.84 | 2.38 | 1 | 9 |
| Zahle | 383 | 2.25 | 1.743 | .089 | 2.07 | 2.42 | 1 | 9 |
| Total | 664 | 2.17 | 1.622 | .063 | 2.05 | 2.29 | 1 | 9 |

During your pregnancy with your youngest child, how many times did you receive antenatal care?

| Strata | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|-------------------------|-----|------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| Syrian Refugee (IS) | 112 | 4.90 | 3.554 | .336 | 4.24 | 5.57 | 1 | 20 |
| Syrian Refugee (non-IS) | 205 | 4.91 | 3.417 | .239 | 4.44 | 5.38 | 1 | 20 |
| Vulnerable Lebanese | 351 | 6.72 | 3.281 | .175 | 6.38 | 7.07 | 1 | 20 |
| Total | 668 | 5.86 | 3.485 | .135 | 5.59 | 6.12 | 1 | 20 |

| District | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|----------------------|-----|------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| Baalbek | 165 | 6.82 | 3.750 | .292 | 6.25 | 7.40 | 1 | 20 |
| West Bekaa & Rachaya | 118 | 5.64 | 3.174 | .292 | 5.07 | 6.22 | 1 | 18 |
| Zahle | 385 | 5.51 | 3.388 | .173 | 5.17 | 5.85 | 1 | 20 |
| Total | 668 | 5.86 | 3.485 | .135 | 5.59 | 6.12 | 1 | 20 |

Cost of Services, 2016

Reproductive Health

How much did you pay for your last reproductive health service (USD)?

| Strata | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|-------------------------|-----|-------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| Syrian Refugee (IS) | 34 | 17.74 | 34.460 | 5.910 | 5.71 | 29.76 | 0 | 200 |
| Syrian Refugee (non-IS) | 62 | 27.85 | 49.330 | 6.265 | 15.33 | 40.38 | 1 | 270 |
| Vulnerable Lebanese | 161 | 43.21 | 40.918 | 3.225 | 36.84 | 49.58 | 0 | 300 |
| Total | 257 | 36.14 | 43.271 | 2.699 | 30.82 | 41.45 | 0 | 300 |

| District | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|----------------------|-----|-------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| Baalbek | 56 | 42.45 | 51.156 | 6.836 | 28.75 | 56.15 | 2 | 300 |
| West Bekaa & Rachaya | 41 | 31.29 | 37.055 | 5.787 | 19.60 | 42.99 | 0 | 200 |
| Zahle | 160 | 35.17 | 41.750 | 3.301 | 28.65 | 41.69 | 0 | 270 |
| Total | 257 | 36.14 | 43.271 | 2.699 | 30.82 | 41.45 | 0 | 300 |

Antenatal Care

How much did you pay for antenatal care (USD)?

| Strata | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|-------------------------|-----|-------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| Syrian Refugee (IS) | 101 | 30.61 | 53.164 | 5.290 | 20.12 | 41.11 | 1 | 300 |
| Syrian Refugee (non-IS) | 183 | 25.64 | 49.910 | 3.689 | 18.36 | 32.92 | 0 | 500 |
| Vulnerable Lebanese | 337 | 49.79 | 62.909 | 3.427 | 43.05 | 56.53 | 0 | 400 |
| Total | 621 | 39.55 | 58.813 | 2.360 | 34.92 | 44.19 | 0 | 500 |

| District | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|----------------------|-----|-------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| Baalbek | 151 | 48.68 | 71.070 | 5.784 | 37.25 | 60.11 | 1 | 500 |
| West Bekaa & Rachaya | 105 | 43.11 | 71.213 | 6.950 | 29.33 | 56.90 | 0 | 400 |
| Zahle | 365 | 34.75 | 47.957 | 2.510 | 29.81 | 39.69 | 0 | 400 |
| Total | 621 | 39.55 | 58.813 | 2.360 | 34.92 | 44.19 | 0 | 500 |

Delivery Care*How much did you pay for the delivery (USD)?*

| Strata | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|-------------------------|-----|--------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| Syrian Refugee (IS) | 109 | 124.39 | 130.496 | 12.499 | 99.62 | 149.17 | 0 | 800 |
| Syrian Refugee (non-IS) | 218 | 122.64 | 126.451 | 8.564 | 105.76 | 139.52 | 0 | 850 |
| Vulnerable Lebanese | 337 | 294.01 | 261.766 | 14.259 | 265.96 | 322.06 | 0 | 2000 |
| Total | 664 | 209.90 | 223.686 | 8.681 | 192.86 | 226.95 | 0 | 2000 |

| District | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|----------------------|-----|--------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| Baalbek | 162 | 192.38 | 178.427 | 14.019 | 164.70 | 220.07 | 0 | 1000 |
| West Bekaa & Rachaya | 111 | 140.04 | 193.732 | 18.388 | 103.59 | 176.48 | 0 | 1500 |
| Zahle | 391 | 237.00 | 243.061 | 12.292 | 212.83 | 261.16 | 0 | 2000 |
| Total | 664 | 209.90 | 223.686 | 8.681 | 192.86 | 226.95 | 0 | 2000 |

Postnatal Care*How much did you pay for the postnatal check (USD)?*

| Strata | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|-------------------------|-----|-------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| Syrian Refugee (IS) | 19 | 14.05 | 14.331 | 3.288 | 7.15 | 20.96 | 0 | 60 |
| Syrian Refugee (non-IS) | 35 | 21.49 | 49.892 | 8.433 | 4.35 | 38.62 | 0 | 300 |
| Vulnerable Lebanese | 112 | 40.51 | 53.211 | 5.028 | 30.55 | 50.47 | 0 | 400 |
| Total | 166 | 33.47 | 50.474 | 3.918 | 25.73 | 41.20 | 0 | 400 |

| District | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|----------------------|-----|-------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| Baalbek | 43 | 26.51 | 26.161 | 3.990 | 18.46 | 34.56 | 0 | 130 |
| West Bekaa & Rachaya | 31 | 27.94 | 23.009 | 4.132 | 19.50 | 36.38 | 0 | 100 |
| Zahle | 92 | 38.59 | 63.789 | 6.650 | 25.38 | 51.80 | 0 | 400 |
| Total | 166 | 33.47 | 50.474 | 3.918 | 25.73 | 41.20 | 0 | 400 |

Psychosocial Support Services*How much did you pay for a Psychosocial Support Service (USD)?*

| Strata | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|-------------------------|----|-------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| Syrian Refugee (IS) | 3 | 5.33 | 2.887 | 1.667 | -1.84 | 12.50 | 2 | 7 |
| Syrian Refugee (non-IS) | 9 | 15.78 | 12.448 | 4.149 | 6.21 | 25.35 | 2 | 33 |
| Vulnerable Lebanese | 24 | 46.04 | 41.946 | 8.562 | 28.33 | 63.75 | 0 | 200 |
| Total | 36 | 35.08 | 38.028 | 6.338 | 22.22 | 47.95 | 0 | 200 |

| District | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|----------------------|----|-------|----------------|------------|----------------------------------|-------------|---------|---------|
| | | | | | Lower Bound | Upper Bound | | |
| Baalbek | 13 | 44.77 | 49.553 | 13.744 | 14.82 | 74.71 | 2 | 200 |
| West Bekaa & Rachaya | 7 | 30.00 | 35.209 | 13.308 | -2.56 | 62.56 | 0 | 100 |
| Zahle | 16 | 29.44 | 28.048 | 7.012 | 14.49 | 44.38 | 0 | 100 |
| Total | 36 | 35.08 | 38.028 | 6.338 | 22.22 | 47.95 | 0 | 200 |

ANNEX B. COMPARISON OF KPC SURVEY TO WHO CORE INDICATOR EQUATIONS

Risk Factors

Nutrition

Exclusive breastfeeding rate 0 – 5 months of age (<6 months)

| | KPC Survey | WHO Core Health Indicators | WHO Method of Measurement |
|--------------------|--|---|---|
| Numerator | Number of mothers that breastfed, gave nothing to drink other than breastmilk the first six months after delivery and had either stopped breastfeeding but breastfed 6+ months or were still breastfeeding and the infant was 6+ months of age | Number of infants 0 – 5 months of age who are exclusively breastfed | Percentage of infants age 0 – 5 months of age who received only breast milk on the previous day. Vitamins and mineral drops or medicines are not counted. |
| Denominator | Number of mothers whose youngest child is ≤ 24 months of age | Total number of infants 0 – 5 months of age surveyed | |

Early initiation of breastfeeding

| | KPC Survey | WHO Core Health Indicators | WHO Method of Measurement |
|--------------------|---|---|----------------------------|
| Numerator | Number of mothers who breastfed their youngest child within 1 hour of birth | Number of newborns breastfed within 1 hour of birth | See DHS and MICS questions |
| Denominator | Number of mothers whose youngest child is ≤ 24 months of age | Number of live births in a specified time period | |

Service Coverage

Reproductive, maternal, newborn, child and adolescent

Contraceptive prevalence rate

| | KPC Survey | WHO Core Health Indicators |
|--------------------|--|---|
| Numerator | Number of women who report doing something or using any method to delay or avoid getting pregnant | Number of women using or partner using a contraceptive method |
| Denominator | Total number of women with at least one child under age 5 whose husband currently resides with her | Number of women married or in union |

Antenatal care coverage

| | KPC Survey | WHO Core Health Indicators |
|--------------------|--|--|
| Numerator | Number of respondents that received 4+ ANC visits during pregnancy with their youngest child | Number of women aged 15-49 with a live birth in a given time period who received antenatal care (at least one visit or) four or more times |
| Denominator | Number of respondents with at least one child < 5 years of age | Total number of women aged 15-49 with a live birth in the same period |

Births attended by skilled health personnel

| | KPC Survey | WHO Core Health Indicators | WHO Method of Measurement |
|--------------------|--|--|---|
| Numerator | Percent of respondents whose delivery of their youngest child was attended by a doctor, nurse or midwife | Number of births attended by skilled health personnel (doctors, nurses, midwives) trained in providing life-saving obstetric care, including giving the necessary supervision, care and advice to women during pregnancy, childbirth and the postpartum period, to conduct deliveries on their own, and to care for newborns | Definition of skilled attendant varies between countries. In DHS, MICS, and RHS, the respondent is asked about each live birth and who helped during delivery for a period up to five years before the interview. |
| Denominator | Number of respondents with at least one child < 5 years of age | The total number of live births in the same time period | |

Postpartum care coverage

| | KPC Survey | WHO Core Health Indicators |
|--------------------|---|---|
| Numerator | Percent of respondents that received postnatal check within two weeks of delivery of their youngest child | Number of mothers and babies who received postpartum care within two days of childbirth (regardless of place of delivery) |
| Denominator | Number of respondents with at least one child < 5 years of age | Total number of women age 15-49 with a live birth in the specified time period |

Care-seeking for symptoms of pneumonia

| | KPC Survey | WHO Core Health Indicators | WHO Method of Measurement |
|--------------------|---|---|--|
| Numerator | Number of respondents that took their child with ARI symptoms in the past two weeks to a health facility (SDC, mobile clinic, health center, private clinic, other (e.g., NGO) clinic, or hospital) for treatment | Number of children with suspected pneumonia in the two weeks preceding the survey taken to an appropriate health provider | UNICEF/WHO recommends that suspected Acute Respiratory Infection (ARI) be described as “presumed pneumonia” to better reflect the probable cause and the recommended interventions. The definition of ARI used in the DHS and MICS is the standard and is based on the mother’s perception of a child who has a cough, is breathing faster than usual with quick, short breaths or is having difficulty breathing, excluding children who had only a blocked nose. |
| Denominator | Number of respondents with a child < 5 that had ARI symptoms (cough and/or difficulty breathing, fast breathing, or short/quick breaths) in the past two weeks | Number of children with suspected pneumonia in the two weeks preceding the survey | |

Children with diarrhea receiving oral rehydration solution (ORS)

| | KPC Survey | WHO Core Health Indicators | WHO Method of Measurement |
|--------------------|---|--|---|
| Numerator | Number of respondents that gave their child < 5 with diarrheal illness in the past two weeks fluid made from an ORS pack as treatment | Number of children under 5 years of age with diarrhea in the last two weeks receiving ORS (fluids made from ORS packets or prepackaged ORS fluids) | According to the DHS, the term(s) used for diarrhea should encompass the expressions used for all forms of diarrhea, including bloody stools (consistent with dysentery), watery stools, etc. The term encompasses the mother’s definition as well as locally-used term(s). |
| Denominator | Number of respondents with a child < 5 that had diarrheal illness (diarrhea or blood in stool) in the past two weeks | Number of children with diarrhea in the two weeks preceding the survey | |

Immunization*Immunization coverage rate by vaccine for each vaccine in the national schedule*

| | KPC Survey | National Lebanese Vaccination Schedule | WHO Core Health Indicators | WHO Method of Estimation |
|--------------------|---|--|--|--|
| Numerator | Number of children that received Polio 3 + Penta 3 + Measles + MMR | At birth: Hepatitis B 2 months: Polio 1 (IPV) Pentavalent 1 (DPT-Hepatitis B-Hib) 4 months: Polio 2 (OPV) Pentavalent 2 | The number of individuals in the target group for each vaccine that has received the last recommended dose in the series. For vaccines in the infant immunization schedule, this would be the number of children aged 12-23 months who have received the specified vaccinations before their first birthday. | For survey data, the vaccination status of children aged 12-23 months is used for vaccines included in the infant immunization schedule, collected from child health cards, or, if there is no card, from recall by the caretaker. |
| Denominator | Number of children 12 – 59 months of age whose vaccinations cards were examined and copied from by the enumerator | 6 months: Polio 3 (OPV) Pentavalent 3 9 months: Measles (zero dose) 12 months: MMR (first dose) | The total number of individuals in the target group for each vaccine. For vaccines in the infant immunization schedule, this would be the total number of infants surviving to age one. | |