



FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative



Baseline Summary Report 1st Annual Panel Survey 2021: Comprehensive Evaluation of the Community Health and Nutrition (CHN) program

Jordan Nutrition Innovation Lab (JNIL)
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Feed the Future Jordan Nutrition Innovation Lab (JNIL)

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Acronyms and Abbreviations

ANC	Antenatal Care
ASF	Animal Source Food
BF	Breast Feeding
BFHI	Baby Friendly Hospital Initiative
BMS	Breastmilk Substitute
BMI	Body Mass Index
CBF	Continued Breastfeeding
CF	Complementary Feeding
CHC	Community Health Center
CHN	Community Health and Nutrition
CI	Confidence Interval
DHS	Demographic and Health Surveys
DGLV	Dark Green Leafy Vegetables
EBF	Exclusive Breastfeeding
EMR	East Mediterranean Region
FP	Family Planning
HIES	Household Income and Expenditure Survey
IBFAN	International Baby Food Action Network
IFH	Institute of Family Health
IUD	Intrauterine Device
IYCF	Infant and Young Child Feeding
JNIL	Jordan Nutrition Innovation Lab
LAM	Lactational Amenorrhea Method
LBW	Low Birth Weight
MAD	Minimum Acceptable Diet
MCM	Modern Contraceptive Methods
MDD-W	Minimum Dietary Diversity in Women
MENA	Middle East and North Africa
MMF	Minimum Meal Frequency
MIYCN	Maternal Infant and Young Child Nutrition
NCD	Non-Communicable Diseases
NGO	Non-Governmental Organization
OCP	Oral Contraceptive Pills
OR	Odds Ratio
PNC	Postnatal Care
PHC	Primary health Center
PLW	Pregnant and Lactating Women

SD	Standard Deviation
UNICEF	United Nations International Children's Fund
USAID	United States Agency for International Development
WHA	World Health Assembly
WHO	World Health Organization
WHR	Waist-to-Hip Ratio

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I. Executive Summary

There is compelling evidence that breastfeeding and complementary feeding are crucial for the growth and development of a child, and in preventing malnutrition. The Community Health and Nutrition (CHN) program, a program supported by the United States Agency for International Development's (USAID), is being implemented by FHI 360 in Jordan. The goal of the CHN program is to improve the nutritional status of pregnant and lactating women (PLW), infants, and young children under the age of two years old in target areas of the Hashemite Kingdom of Jordan. The program aims to fulfill this goal by using a behavior centered approach to support improvements in infant and young child feeding (IYCF) practices and increase adoption of optimal family planning practices and maternal, infant, and young child nutrition (MIYCN) practices by improving health care provider support for proper IYCF practices and use of modern contraceptive methods (MCMs).

Critical to programmatic implementation is generating evidence on the impact and performance of the program. Given the importance of CHN's objectives within the context of IYCF, women's health, as well as the Government of Jordan's policies in supporting optimal health and wellbeing of women and infants and young children, the Jordan Nutrition Innovation Lab (JNIL) at Tufts University, supported by USAID/Jordan, is conducting a comprehensive evaluation of the "full" CHN intervention program using a prospective cross sectional study design with a total of four rounds of data collection between 2021 to 2025.

Within this context, a baseline (Panel 1) survey, part of a prospective cross-sectional evaluation, was conducted between September-November 2021, to capture data and information in establishing the prevailing situation in the three CHN-targeted governorates of Amman, Karak, and Zarqa on maternal, infant, and young child nutrition, and the status of PLW and service providers (SP). Two separate quantitative surveys were implemented. The first one was a PLW survey administered to 1079 pregnant and lactating women with child under the age of 2 years in 24 health facilities selected and targeted by the CHN program. The second, was a SP survey administered to 70 service providers (health care providers) working in the maternal and child health department at the CHN targeted health facilities across the three governorates of Jordan (Amman, Karak, and Zarqa).

Data for the PLW survey were collected from October 10, 2021, to November 24, 2021. Data for the SP survey were collected from October 3, 2021, to October 25, 2021. Data were cleaned and analyzed using different statistical software with an assessment of descriptive and inferential analyses being conducted. With respect to the specific CHN outcomes, we found that rates of early initiation of breastfeeding to be 57% across the baseline sample (61% in Amman, 59% in Karak, and 47% in Zarqa). Exclusive breastfeeding under 6 months was 33%, with the lowest rates in Karak (16%) and the highest rates in Zarqa (43%) and Amman (33%). The median duration of exclusive breastfeeding was 1.31 months. Mothers with newborns who received messages on early initiation of breastfeeding were 1.8 times more likely to initiate breastfeeding immediately after childbirth, and mothers with newborns who received messages on the importance of exclusive breastfeeding were 3.4 times more likely to exclusively breastfeed their infants. Only about 25% of infants and young children between 6-23 months met the Minimum Acceptable Diet (MAD), with the lowest rates in Karak (16%) and highest rates in Amman (28%). With respect to knowledge on infant feeding practices, 57% of survey respondents had received information on early initiation of breastfeeding, mostly from faith-based groups and medical doctors. Over half of the women (54%) received information on

exclusive breastfeeding, of which 58% had received information from their neighbor or relative, while 38% received information from the doctors. About 40% of women had received information on what foods or food groups to feed to children 6-23 months, mostly from friends and neighbors.

The percentage of pregnant women who met the minimum diet diversity in women (MDD-W) was 55%, while MDD-W in non-pregnant or lactating women (18-49 years) was 48%. Similarly, non-pregnant women who received messages and counseling on consuming a diverse diet were 1.7 times more likely to meet the MDD-W, while pregnant women were 1.5 times more likely to meet the MDD-W. Compared to non-pregnant women, a higher percentage of pregnant women consumed micronutrient rich food groups that included dairy (76% vs 66%), poultry, meat, & fish (55% vs 48%), eggs (40% vs 34%), dark green leafy vegetables (31% vs 26%), and vitamin A rich fruits and vegetables (28% vs 14%). With respect to knowledge, less than one-fourth (23%) of women received information on their diet and nutrition during pregnancy and lactation. A common source of information were neighbors and friends. Prevalence of overweight in non-pregnant women was high at 36%, with higher prevalence in Karak (39%) and Amman (37%), while obesity was highest in Zarqa at 33%. More than half of the non-pregnant women in Karak were categorized as a high health risk group, measured by waist-to-hip ratio (WHR).

Almost half of the pregnant women started antenatal care (ANC) from their first month. Women chose a health facility due to its proximity, recommendation by their physicians and/or due to medical insurance coverage. Over half of the women delivered at a public facility while 31% delivered at a private facility. About three quarters of non-pregnant lactating women were using a form of contraception. The modern contraceptive prevalence rate among non-pregnant women (N=495) aged 18-49 was 53% (52% in Amman, 52% in Karak, and 56% in Zarqa). About 77% of women and their households had received information on using MCMs, mostly from their doctors, neighbors, and friends.

Similarly, the baseline findings from the SP study revealed variations in the knowledge, attitudes, practices, capacity, and support of the health care providers across the three governorates and public vs private sectors. Overall, 87% of healthcare providers in the survey were aware of the importance of early initiation of breastfeeding (81% in Amman, 88% in Karak, and 100% in Zarqa) and 92% had knowledge about exclusive breastfeeding for 6 months (89% in Amman, 88% in Karak, and 100% in Zarqa). About 79% of HCPs knew that offering infant formula in the first few hours after birth discouraged breastfeeding (84% in Amman, 76% in Karak, and 69% in Zarqa). Only 16% of HCPs correctly identified the signs of positioning of a baby for breastfeeding and only 47% were aware of demand breastfeeding. Additionally, only 15% of HCPs at the private health facilities knew about international code of marketing breastmilk substitutes, compared to 43% of HCPs in the public facilities. Furthermore, over 90% of the HCPs could not correctly identify the minimum number of food groups a child of 6-23 months should eat each day (minimum acceptable diet). Knowledge on MCMs was high amongst HCPs, with more than 90% of HCPs in the survey having knowledge about the MCMs such as IUDs, oral pills, condoms, and implants.

With reference to training received, 65% of HCPs had received in-service training on breastfeeding practices (60% in Amman, 83% in Karak, and 58% in Zarqa). More HCPs at public health facilities received training on breastfeeding practices compared to private health facilities (81% vs 48%, respectively). About 48% has received training on diet and nutrition (44% in Amman, 50% in Karak, and 25% in Zarqa). Only about 25% had received training on newborn care services (20% in Amman, 25% in Karak, and 33% in Zarqa).

Regarding HCPs attitudes on IYCF practices, the majority of HCPs agreed that early initiation of breastfeeding ensures that infants receive colostrum and increases the likelihood of exclusive breastfeeding. About 66% confirmed that health facilities had written infant feeding policies in place (73% in Amman, 53% in Karak, and 69% in Zarqa), and 74% of HCPs confirmed that women who plan to deliver at the facility received prenatal breastfeeding education (76% in Amman, 83% in Karak, and 50% in Zarqa). More than 95% of healthcare providers agreed that the use of MCMs is beneficial for women of reproductive age to prevent unwanted pregnancy and that health education is important for women interested in using contraceptive methods. HCPs also identified husband or partner's objections (84% in Amman, 75% in Karak, and 94% in Zarqa), cultural beliefs (76% in Amman, 47% in Karak, and 56% in Zarqa) and religious beliefs (46% in Amman, 35% in Karak, and 31% in Zarqa) as primary reasons that are likely to prevent women from using contraceptives.

The baseline findings from the survey conducted between September-November 2021 presents information on the prevailing situation in the CHN-targeted areas about maternal, infant, and young child nutrition. The findings in this baseline provide an understanding of the differences across governorates and facility type. Future planned assessments will allow us to assess the level of change of these key program outcomes that are indicators of optimal maternal and IYCF practices from early initiation of breastfeeding, exclusive breastfeeding, and continued breastfeeding to appropriate complementary feedings, as well as nutrition of reproductive age group women during pregnancy and lactation in the targeted communities of Jordan.

Our findings reveal significant variability in the key CHN-targeted impact outcomes across the three governorates of Amman, Karak and Zarqa. We find variability in the nutritional status of PLW and infants and young children under 24 months, the knowledge, attitudes, and practices on IYCF and family planning practices of the PLW, the extent of exposure to information on MIYCN, and factors associated with key IYCF (breastfeeding) and family planning practices. Similarly, we found variability in the knowledge, attitudes, and capacity of the HCPs across the three CHN targeted governorates. These results indicate the need to control for such differences when assessing change over time within the context of program impact estimation.

Finally, our cross-sectional inferential analysis of specific outcomes highlighted mother's education in most instances, the household's socio-economic status, and the geographic location as key factors associated with the odds of better outcomes. Critical concerns must be raised of the findings of nutritional status of non-pregnant lactating women. High rates of overweight and obesity as demonstrated by body mass index and waist to hip ratio not only highlight the risk of complications in future pregnancies (e.g., greater risk of gestational diabetes), but also long-term higher risk of early onset of non-communicable diseases.

2. Background

2.1 Introduction

In Jordan, low rates of exclusive breastfeeding and poor complementary feeding are significant public health concerns, as are rapidly rising rates of overweight and obesity amongst both adult women and children. While the rates of early initiation of breastfeeding have improved over time (1990 to 2017), with two-thirds of newborns being put to the breast within the first hour of life, three out of four infants still do not receive the protective benefits of exclusive breastfeeding as of 2017, a number that has not changed for three decades. Similarly, the median duration of exclusive breastfeeding has not changed in three decades. Furthermore, there is an increased reliance on breastmilk substitutes (BMS). With respect to complementary feeding practices in infants and children 6-23 months of age, the percentage achieving minimum meal frequency (MMF) has drastically reduced over time, with less than half of the infants and young children aged 9-11 months and 18-23 months being fed the minimum number of meals for their age. Minimum Acceptable Diet (MAD) has also progressively declined over the years, with only one in every six infants and young children receiving a minimum acceptable diet, while consumption of micronutrient rich foods, eggs, meat, fish, and poultry has declined considerably over time. Conversely, consumption of infant formula and sugar sweetened beverages has increased over time in Jordan¹.

A study in northern Jordan found almost 25% of children aged 6-12 years were classified as either overweight or obese². Rates of overweight and obesity reported in the DHS 2012 in children under 5 are lower (at 5%), but high in infants under 6 months of age at 13%. Coupled with a stunting rate of 8%, there is great opportunity for improvement through better diet practices. Similarly, 54% of reproductive age women, irrespective of geographic location (rural/urban and governorate), socio-economic status, and education, are classified as overweight or obese. Women in the lowest socio-economic quintile and those with no education have significantly higher rates at 56% and 59%, respectively.² At the same time, 31% of children/adolescents (aged 5-19) are overweight and 13% have obesity³. Most Jordanian women discontinue the use of contraceptive drugs or devices within 12 months of having a child, and the use of any contraceptive method decreased from 61% in 2012 to 52% in 2017-2018. Nearly one-third of births in Jordan are spaced less than 2 years apart⁴.

2.2 Barriers for Achieving Optimal IYCF Practices in Jordan

At the policy level, Jordan is one of 17 countries within the Eastern Mediterranean Region (EMR) that implements the International Code of Marketing of Breast-milk Substitutes (the Code) and its relevant World Health Assembly (WHA) resolutions.³The Government of Jordan includes all 11 articles of the Code within

¹ Jordan Nutrition Innovation Lab, Trends analysis report of infants and young child feeding practices in the Hashemite Kingdom of Jordan, 1990-2017, November 2021

² Khader Y, Irshaidat O, Khasawneh M, Amarin Z, Alomari M, Batiha A. Overweight and obesity among school children in Jordan: Prevalence and associated factors. *Matern Child Health J.* 2009;13(3):424-431. doi:10.1007/s10995-008-0362-0

^{3,4} Population J, Survey FH. *THE HASHEMITE KINGDOM OF JORDAN*; 2017. www.DHSprogram.com. Accessed November 30, 2020.

this legislation, but despite the existence of such legislation, advocacy, monitoring, and enforcement are still inadequate. As part of the Code and by a World Health Organization (WHO) recommendation, the Baby Friendly Hospital Initiative (BFHI) has been piloted but is currently implemented in only five Jordanian hospitals. BFHI recommends limited use of breastmilk substitutes, responsive feeding, and support when mothers and babies are discharged from the hospital. An assessment of BFHI in the EMR found health professionals deficient in knowledge about BFHI and their role in supporting mothers in overcoming breastfeeding-related difficulties. Additionally, industry influence on country policies and distribution of their breastmilk substitute products to health workers and mothers undermine BFHI objectives.⁴

At the implementation level, support for EBF and continued breastfeeding requires provision of services that will facilitate continued behaviors and/or change in behaviors. An assessment of 32 hospitals across Jordan that provide maternity services (maternal and newborn care) found hospitals with shortages of personnel from obstetricians and gynecologists, pediatricians, and neonatologists to midwives and nurses. Furthermore, they found a lack of systematic delivery of antenatal care and insufficient supplies, equipment, and drugs. Only a quarter of the hospitals provided breast feeding (BF) counseling and about 21% provided family planning (FP) counseling.⁵ Primary health clinics (PHCs) offer quick access to medical care, vaccination, maternity, and childcare and chronic disease management.⁶ While delivery services and postnatal care may be provided at certain PHCs, it is not clear to what extent the mother receives support on early initiation of BF and support around lactation issues.

The nurse to doctor ratio in the health sector as a whole (1.3 nurses to 1.0 doctors) remains very low and is among the lowest group of countries in the world.⁷ This number has significantly improved according to the manpower indicators 2009-2013, however, there are imbalances in the distribution of health personnel between directorates, health sectors, and primary and secondary healthcare levels.⁸ In addition, poor distribution management and a high rate of turnover among medical and nursing staff, especially in the Ministry of Health, impede effective healthcare. The Jordan National Strategy for Health Sector (2015-2019) seeks to holistically strengthen Jordan's health landscape, contribute to strengthened partnerships between the health divisions, and lead to decentralization in decision-making.⁸

In addition to policy and institutional barriers at the individual level, the main barriers affecting adherence to proper IYCF practices include lack of knowledge about recommended BF and complementary feeding (CF) practices; influence from culture custodians such as grandmothers, mothers-in-law, and other family and community members; burden of work and other responsibilities at home; and limited involvement of partners in day-to-day care of the child.⁹ A Cesarean delivery and an infant's admission to the hospital were amongst the major barriers to initiation and continuation of EBF.¹⁰ A review of the literature and feedback from key informants (UNICEF and University of Jordan, Hospital - Neonatology and Nursing/Midwifery) indicate that important constraints include: i) a lack of sufficient maternity leave, ii) barriers in the workplace, and iii) lack of support at the clinical level to the mother and the newborn infant. A study conducted in southern Jordan found a breastfeeding initiation rate of 72% that fell to only 21% EBF rate by the time infants reach 6 months of age.¹¹ An assessment of mothers showed satisfactory knowledge and positive attitudes about BF, but early cessation was attributed to work demands by about 30% of the women.¹¹ Over 80% of the respondents in the study did not have a designated area for BF at their workplaces, and 60% reported that maternity leave was not long enough for successful BF. Similarly, in another study in northern Jordan, EBF was affected by parity and maternal employment. Even though 87% of mothers initiate BF after birth, nearly 40% also supplement with infant formula. The barriers to EBF are consistent with the rest of the world:

mother's perceptions and beliefs on inadequate milk supply, lack of educational programs on EBF, absence of lactation counsellors, and unsupportive work policies and environment.¹⁰

Furthermore, women in lower socio-economic strata perceive formula-feeding to be a symbol of wealth.¹² Other studies have found that women who had a caesarian delivery or were employed were less likely to practice full BF.^{10,13} In addition, lack of adequate midwives and medical staff further burdens the healthcare system, leaving limited time to counsel postnatal mothers on proper BF practices.¹⁴ While no specific literature linking the lack of clinical awareness of the importance of EBF and later obesity was found, a lack of awareness at the clinical level of the long term complications of early childhood obesity has been reported in a study conducted across the Middle East and North Africa (MENA) region, including Jordan. It found between 36-50% of physicians do not consider early childhood obesity to be a risk factor for hypertension, type II diabetes, and coronary artery disease (among other NCDs).¹⁵

With respect to CF, 17% of infants consume CFs prematurely while being breastfed¹⁶ and there is limited information on the determinants for achieving optimal CF.¹⁷ One study found most infants less than 6 months of age already received CF, and that delivery by cesarean section, childbirth weight, and pacifier use were found to be determinants for the introduction of CF before 6 months of age.¹⁸ Other determinants include wanting their babies to grow more, babies are hungry if they cry, and that milk is not enough for nutrition.¹⁹ An assessment of DHS data between 1990 and 2018 shows an increase in formula given to infants and young children 6-23 months of age over the time period, as well as sugary drinks such as juice and tea. Less data is available on solid and semi-solid CF given to infants and young children 6-23 months of age, however, expenditure data from the Household Income and Expenditure Survey (HIES) between 2002 and 2013 show an increase in the proportion of the food budget spent on infant formula, baby food, juice, soda, fried or fatty processed foods, and sugary processed foods (i.e., cakes, candy, cookies, chocolates) by households with a child under two years of age.

2.3 CHN Program

There is compelling evidence that BF and CF are crucial for the growth and development of a child, and in preventing malnutrition. Furthermore, our literature review indicates that diet pre-conception and during pregnancy is critical not only for birth prognosis, but also for long term health of both the mother and child. In Jordan, there is some evidence that indicates the need to intervene in supporting optimal health and nutrition in pregnant and lactating women and their infants along with providing services to support optimal reproductive health. The national data indicate some variation in BF, CF, women's diets, and reproductive health based on geography, the age group of the children, socioeconomic and cultural factors, and the initial nutritional status of the children, indicating a need for well-designed, culturally sensitive programs that support maternal, infant, and young child nutrition and health.

Given this context, a new program called "Community Health and Nutrition," supported by the United States Agency for International Development's (USAID), will be implemented by an international NGO, FHI 360. The goal of the Community Health and Nutrition (CHN) program is to improve the nutritional status of PLW and infants and young children under the age of two years in target areas of the Hashemite Kingdom of Jordan. The program will fulfill this goal by implementing activities to support improvements in IYCF practices,

increase adoption of optimal FP practices and MIYCN practices, and by improving health care provider support for proper IYCF practices and use of MCM.

The program will use a behavior centered approach along with supporting the creation of supply through improved provider services and generating demand through mobilizing and empowering women. The approach is unique in that it targets both facilities and communities through specific community and facility actions while enhancing community-facility linkages. The community component will focus on using community-based organizations, leaders, and influencers to effect change in practice and demand service (FP, MIYCN) while the facility component will support the generation of quality supply, including development of provider counseling skills, improved maternity and newborn services in the selected facilities, and the incorporation of theoretical and practical training around IYCF, BF, and FP into clinical and nutrition curricula in the country.

The specific outcomes of CHN are as follows:

- 1) Enhanced dietary diversity of PLW.
- 2) Improved practices of initiation of BF within one hour of delivery.
- 3) Improved EBF practices in infants aged under 6 months.
- 4) Improved median duration of EBF in infants under 6 months of age.
- 5) Improved nutritionally adequate diet and safe complementary feeding in infants and young children 6-23 months of age.
- 6) Improved postpartum practices on the use of MCMs by at least 12 months after childbirth.

3. JNIL Comprehensive Evaluation of the CHN Program

Critical to programmatic implementation is generating evidence on the impact and performance of the program. Given the importance of CHN's objectives within the context of IYCF, women's health as well as the Government of Jordan's policies in supporting optimal health and wellbeing of women, infants, and young children, JNIL will conduct a comprehensive evaluation of the "full" CHN intervention program. The comprehensive evaluation aims to assess the impact of the program, examine program processes and implementation, and determine if and how they affected performance.

The aims of the comprehensive evaluation are as follows:

- Aim 1: To assess the impact of the program in improving diets of PLW, infants, and young children under 2 years of age.
- Aim 2: To assess fidelity of program implementation, barriers, and challenges at different levels of implementation and across program stakeholders.
- Aim 3: To assess sustained adoption of CHN targeted behaviors and practices, and understand the factors that influenced sustained impact, as well as barriers that deter sustainability.

3.1 Overall Evaluation Design

The evaluation utilizes a cluster-randomized, stratified step-wedge design with two steps and two strata (governorate and type of health facility, that is, public vs private). The CHN program, using a staggered roll-out approach, will deliver the “full intervention” across the three governorates (Karak, Amman, and Zarqa) in two distinct cohorts (**Figure 1**). Health facilities and districts within the catchment area of the health facilities are targets of the CHN “full intervention”. The step wedge design is particularly well suited for evaluating large-scale programs, like CHN, that roll out the intervention across clusters in phases.

The evaluation design has three design elements. The first is comprised of a series of four, annual, quantitative, cross-sectional surveys (2021 – baseline/Panel 1; 2022 – Panel 2; 2023 – Panel 3; 2024- Panel 4) targeting women of reproductive age who are pregnant or are lactating and have a child under 2 years of age. Surveys will be conducted at 12-month intervals, thereby ensuring comparability and controlling for seasonality. Concurrently, a series of four annual cross-sectional SP surveys targeting service providers (healthcare providers and community-based agents) in the program-targeted areas and trained by CHN will be conducted. The second element is comprised of a series of four, qualitative process and performance surveys to assess the fidelity of CHN program implementation, barriers, and challenges at different levels of implementation and across various program stakeholders. Focus group discussions and key informant interviews will be conducted at 12-month intervals targeting CHN program staff, implementing partners, facilitators at the health facility and community level, government stakeholders, and beneficiaries of the program⁵. The third element is an assessment of sustainability to assess the sustained adoption of CHN program targeted behaviors and practices, and to understand the factors that influenced sustained impact, as well as barriers that deter sustainability⁵.

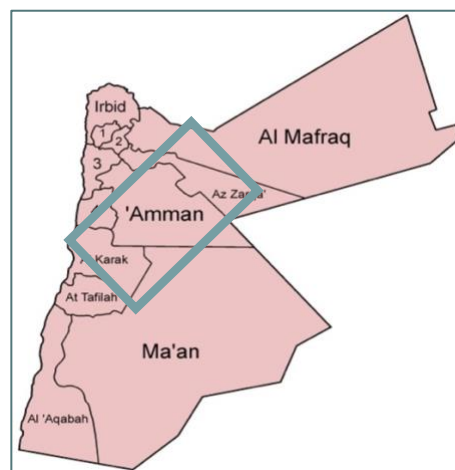


Figure 1. Study locations (governorates)

3.2 Objectives of the Baseline

The specific objectives of the baseline survey were as follows:

1. To determine the prevailing situation of the CHN-defined outcomes which would facilitate the assessment of change between baseline and subsequent evaluations. The indicators associated with the CHN outcomes that were assessed are provided below in **Table 1**.

⁵ This component of the evaluation is being implemented as a separate study

2. To examine factors associated with the key outcome indicators.
3. To assess the nutritional status of PLW.
4. To enumerate the knowledge, attitudes, and practices of PLW around MIYCN (including care and service usage), as these are likely to affect the potential for impact and achievement of CHN outcomes
5. To enumerate the knowledge, attitudes, practices, motivation, and support of health care providers around MIYCN.

Table 1. CHN Outcomes and Baseline Indicator Definitions

CHN Outcome	Indicator Definition
Enhanced dietary diversity of pregnant, and lactating women	Proportion of pregnant and lactating women that consumed at least five out of ten defined food groups the previous day or night
Improved practices of initiation of BF within one hour of delivery	Proportion of infants under 24 months of age put to the breast within the first hour of birth
Improved exclusive breastfeeding (EBF) practices in infants aged under 6 months	Proportion of infants 0-5 months that are exclusively breastfed
Improved median duration of EBF in infants aged under 6 months	Defined as the age in months when 50 % of infants aged 0-5 months did not exclusively receive breast milk the previous day ⁶
Improved nutritionally adequate diet and safe complementary feeding in infants and young children 6-23 months of age	Proportion of children 6-23 months who received minimum acceptable diet
Improved postpartum practices on the use of MCMs by at least 12 months after childbirth	Proportion of women using MCMs by at least 12 months after childbirth

4. Baseline (Panel I) Methodology

4.1. Design, Site Selection, and Sampling

The baseline survey design used a quantitative method to establish baseline values and characterize the current situations regarding key outcome indicators around IYCF practices and maternal nutrition in the three governorates of Jordan (Amman, Karak and Zarqa). Two separate quantitative baseline surveys were conducted. The first one was a PLW survey administered to 1079 pregnant and lactating women with a child under the age of 2 years in 24 health facilities selected and targeted by the CHN program. The second, a SP survey, was applied to 70 service providers (health care providers) working in a maternal and child health

⁶ Note this is only on those infants who are under 6 months. Median duration of any breastfeeding is computed on all infants - from 0-24 months of age

department at the health facilities. This quantitative survey is also part of a prospective cross-sectional study design with a total of four rounds of data collection between 2021 to 2025. Data for both surveys were collected using electronic data capture methods and were administered face-to-face to PLW at the health facilities or in their home settings. **Figure 2** provides an illustrative randomization of the health facilities into the two cohorts.

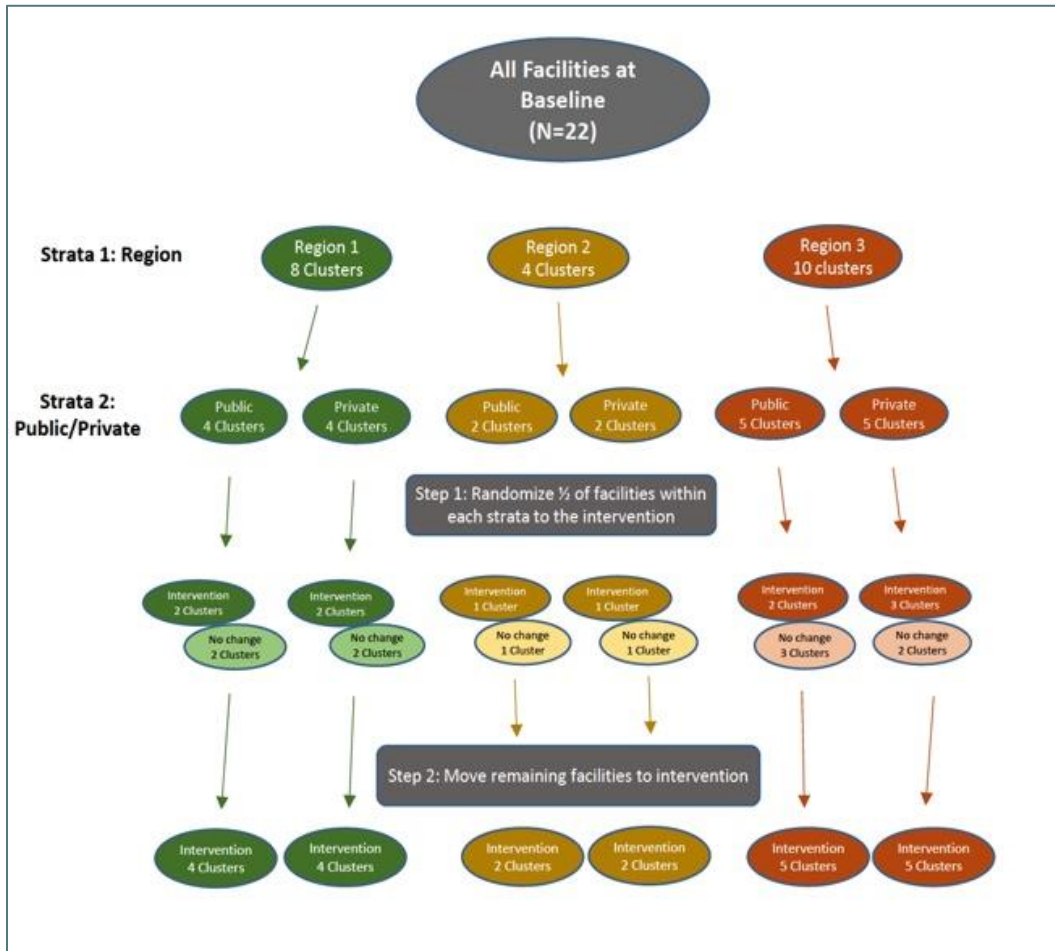


Figure 1. Illustrative randomization of CHN targeted health facilities into two cohorts (Cohort 1 & II)

4.2 Selection of Health Facilities

The baseline survey was implemented in 24 health facilities that are the target of the CHN program in seven districts across the three governorates. CHN originally selected a total of 21 health facilities. Three health facilities were later selected as back-up facilities (one facility per governorate) upon JNIL’s suggestion to account and substitute for dropouts from the program, using a selection criterion below:

- Locality of facility in the community
- Volume of maternal and child health care services delivered by the facility
- Community served by the facility
- Public versus private sector (health facility type)
- Standard of care (accredited/HSD service delivery point/BFHI certified)

Health facilities identified by CHN were stratified by region and by type of health facility (public versus private) and were randomly assigned to Cohort I and II (11 facilities in Cohort 1 and 10 facilities in Cohort II). Use of strata (stratification) ensured representation of both regional and health facility level differences across the two cohorts. The proportion of health facilities in each governorate, and the proportion of public and private health facilities within each governorate, were approximately equal in each cohort. The health facility will be the unit of allocation (delivery of services) in the study, where each facility will serve as its own control and will not have access to CHN program components prior to its implementation. Cohort II facilities will serve as a control for the first year of implementation and then transition into the intervention group.

A complete list of health facilities is provided in **Table 2**.

Table 2. Distribution of CHN Targeted Health Facilities by Governorates and Districts

Governorate	District	Health Facility Name	Facility Type
Amman	Al-Quaismeh	Al-Quaismeh Comprehensive Health Center (CHC)	Public
		Um Nowara Primary Health Center (PHC)	Public
		Khriebt Al-Sook CHC	Public
		Muqabalin CHC	Public
		Al-Hayat General Hospital	Private
		Institute for Family Health (IFH), Al- Quaismeh Clinic	Private
		Islamic Charity Center Society (ICCS), Al Quaismeh clinic	Private
	Al-Qasabah	Al-Basheer Hospital, Obstetrics and Gynecology Hospital	Public
		Ob/Gyn clinic, Royal Hospital	Private
		Al-Maqased Hospital	Private
Ob/Gyn clinic, Al-Maqased Hospital		Private	
		Jabal Amman Hospital for Delivery	Private
Karak	Al-Qasr /Rabbah	Al-Rabbah CHC	Public
	Al-Aghwar Al-Janoobieh /Ghour Al-Safi	Ghour Al-Safi PHC	Public
		Ghour Al-Safi Hospital	Public
	Al-Qasabah	Karak Governmental Hospital	Public
		IFH, Karak Clinic	Private
		"I-Clinic" Health Center	Private
Zarqa	Al-Qasabah	Zarqa New Governmental Hospital	Public
		IFH, Zarka Clinic	Private
		Jabal Al-Zaytoon Hospital	Private
		ICCS, Al-Zarka Clinic	Private
	Al-Hashemiyah	Iskan Al-Hashemiyah CHC	Public
		Al-Hashemiyah PHC	Public

4.3 Selection of Participants

To achieve baseline survey objectives, the survey selected two groups of participants for data collection:

- 1) Pregnant and lactating women with a child under two years of age
- 2) Service providers that included HCPs at the facility level, and community-based agents (CBAs) at the community level.

For the PLW survey, in each of the 24 health facilities, trained enumerators from the Mindset research team (JNIL's research partner in Jordan) coordinated with the maternal and child health department personnel to identify PLW. The identified PLW were invited to participate in the survey and the team ensured that the inclusion criteria (**Table 3**) was met before undergoing the informed consent process. For the SP survey, study personnel from Mindset were introduced to the health facility focal point personnel by the CHN program team at FHI 360. With the help of the focal point personnel, Mindset obtained a list of HCPs who were then invited to participate in the survey and ensured that they met the inclusion criteria highlighted in Table 3 below. Baseline survey on the CBAs were conducted at the time since they had not yet been identified by the CHN program. The survey is planned on a later date as soon as CBAs have been identified by CHN program. This baseline report, therefore, does not include findings from the CBAs.

Table 3. Inclusion and Exclusion Criteria for PLW and SP surveys

Participant Group	Evaluation	Inclusion and Exclusion Criteria
PLW with child under 2	Baseline quantitative PLW survey	<p>Inclusion Criteria</p> <ul style="list-style-type: none"> • Currently a beneficiary of CHN (except at baseline, prior to CHN implementation) • Pregnant or lactating women (18-49 years) with infants and young children under the age of two years • Willing to participate in the study and able to provide informed consent • Currently lives within the study area <p>Exclusion Criteria</p> <ul style="list-style-type: none"> • Pregnant with twins or has twins • Not willing to participate or provide informed consent • Not living in the study area
Service providers: i) healthcare providers	Baseline quantitative SP survey	<p>Inclusion Criteria</p> <ul style="list-style-type: none"> • Currently working in a CHN accredited social franchise facility • Currently working in a maternal and child health department and actively providing services to PLW • Willing to participate in the study • Received training from CHN on integrated maternal and child nutrition and healthcare services
Service providers: ii) Community-based Agents	Baseline quantitative SP survey	No specific inclusion criteria other than being a CBA and heard about CHN in the area

PLW who met the eligibility criteria and provided informed consent were surveyed at the health facility or in their home setting. Data were collected on key measures of interest, including child and maternal health status, diets, socio-economic status, knowledge, attitudes, and practices regarding contraceptive use, pregnancy, and infant and young child feeding practices, as well as anthropometric measurements of women, infants, and young children.

Similarly, health care providers from departments that provide maternal, infant, and young child health services as well as reproductive health services were recruited, and surveys were conducted within the 24 health facilities. Data were collected on HCPs knowledge, attitudes, and determinants of practices around infant, young child feeding practices, family planning, and reproductive health practices. Data collection for the baseline panel survey occurred from October to November 2021.

4.4 Sample Size

For the PLW survey, sample size calculation was based on the CHN program outcome indicators that would allow to detect a minimum difference for key program targeted outcomes. The baseline PLW survey collected data from 1079 pregnant and lactating women (aged 18-49 years) with infants and young children under the age of two years by visiting the 24 CHN targeted health facilities (on average, 45 PLW per facility). The SP survey, on the other hand, used a convenience sampling method and collected data from 70 health care providers from 24 health facilities (2-3 HCPs per health facility).

4.5 Study Procedures

4.5.1 Personnel and Training

Data collection activities were undertaken by Mindset. Mindset utilized its database of over 1000 enumerators and 100 supervisors and hired, trained, standardized, and managed 55 enumerators and 15 supervisors. Given the nature of the surveys, the enumerators and supervisors were divided into two teams, one for the PLW survey (40 enumerators and 10 supervisors), and the second one for the SP survey (15 enumerators and 3 supervisors).

Prior to data collection, training of the data collection team was conducted for a period of 8 days (from August 30-September 7, 2021), during which the field team were introduced to the purpose of the study and trained in standardized procedures for obtaining informed consents, conducting interviews, performing anthropometry measurements, and utilizing data collection on electronic tablets. Field teams were also trained on mitigating procedures for COVID-19 infection prevention, adhering to ethical conduct of research in accordance with standards described in “A Field Training Guide for Human Subjects Research Ethics”, a manual co-developed by Tufts University and Mindset investigative team. All trainings, standardization, and field work were conducted under the direction and supervision of Tufts University faculty.

In addition, a 3-day refresher training was held from September 27-29, 2021. The purpose of the refresher training was i) to orient the data collection team on the updated/amended survey questionnaire based on the

feedback received from the data collection team during the training and from the pretests/piloting of the questionnaire, and ii) to train the data collection team on anthropometry measurements.

4.5.2 Development of Data Collection Tools

Two separate survey questionnaires were developed and used for data collection, the first one for the PLW survey and the second one for the SP survey. The study tool development involved development of survey specific questions and extraction and adaptation of questions from a variety of validated and publicly available study instruments. The module on food frequency questionnaire utilized a Jordan-specific validated questionnaire, with the help of Dr. Reema Tayyem from the University of Jordan and Qatar University. The module on reproductive health and family planning (Module F) utilized questions from the previously administered USAID-funded R4S Project in Jordan. Modules on sociodemographic characteristics and access to durable goods were adapted from the Jordan DHS surveys. The questionnaires were developed in English and translated into Arabic. The modules covered in the PLW survey and SP survey questionnaires are listed in **Table 4** and **Table 5**, respectively.

Table 4. PLW Questionnaire Modules

Table 4. PLW Questionnaire Modules	
MODULE A	Household Information and Characteristics
MODULE B	Nutrition and Health Knowledge Assessment
MODULE C	Internet Access and CHN Messaging Exposure
MODULE D	Food Frequency and Dietary Recall of mother and child under 24 months
MODULE E	Child Feeding Practices and Health
MODULE F	Reproduction, Contraceptive Use, and Pregnancy/Postnatal Care
MODULE G	Breastfeeding Attitudes and Diet Attitudes
MODULE H	Water, Hygiene, and Sanitation
MODULE I	Socioeconomic Characteristics
MODULE J	Access to Durable Goods
MODULE K	Anthropometric Measurements of Mother and Child

Table 5. SPE Questionnaire Modules

Table 4. SP Questionnaire Modules	
MODULE A	Interview Information and Participant Background
MODULE B	Knowledge Assessment
MODULE C	Training
MODULE D	Attitudes Assessment
MODULE E	Determinants of Effectiveness
MODULE F	Practices Assessment
MODULE G	CHN Program Information
MODULE H	COVID-19 Response

4.5.3 Ethical Approval

Ethical approval was provided by the Jordan Ministry of Health Ethical Committee under the Government of Jordan, and the Institutional Review Board at the Health Sciences at Tufts University, Boston, USA. Approvals

from the ethical review boards were received by August 26, 2021. Amendments were submitted to the two IRBs in early October and all approvals were received by October 10, 2021.

4.5.4 Piloting and Pretesting of Study Tools

The questionnaires were pretested for both the PLW and SP surveys. Pretesting was done in nine health facilities in the Irbid, Al-Mafraq, Madaba, and Ajloun governorates. This allowed the research team to refine the questionnaire and instruments. Following the pretesting, approvals were received from the ethical review boards in Jordan and Tufts University on the amendments by October 5, 2021.

4.5.5 Health Facility Visits

Prior to the field team arrivals, health facilities were informed of the survey activities. In addition to the ethical approval, JNIL also received a facilitation letter from the Jordan Ministry of Health requesting the Health Directorate at the governorate level for any needed support to coordinate with the health facilities in the three governorates during the data collection process. The field team carried facilitation letters, identification cards, and project banners all through data collection, identifying them as trained, professional staff of the JNIL project.

4.5.6 Data Collection

The baseline data collection for SPs began on October 3 and was completed on October 25, 2021. Data collection for PLW began on October 10 and was completed on November 24, 2021. The target sample size of PLW was 45 PLW per health facility from the 24 health facilities (thus a total sample size of 1079), while the target sample size for SPs was three HCPs per facility from the 24 facilities (thus a total sample size of 72).

Two enumerators for the PLW survey and one enumerator for the SP survey were deployed per health facility. Enumerators introduced themselves and the study to the respondents (e.g., pregnant, and lactating women or health care providers from specific units that support women, infants, and young children) and requested respondents to participate in determining if they were eligible to participate in the survey. In the case of the PLW survey, once the eligibility criteria were met (listed in **Table 2**), PLW were asked to provide informed consent. A total of 19 facilities successfully achieved the target sample size while five facilities faced significant challenges in fulfilling the targeted sample size. Additional participants were identified from the remaining 19 facilities to compensate the target sample size from the facilities that faced challenges in achieving the target sample size.

Similarly, for SP survey, service providers who met the eligibility criteria were invited to participate in the SP survey after confirming informed consent. A total of 23 health facilities achieved the target samples size while one health facility only had one HCP available for the survey.

The baseline SP survey did not include CBAs, since the community agents had not yet been defined and identified by the CHN program at the time the data collection rolled out. JNIL anticipates implementing a baseline data collection from CBAs as soon as they've been identified by the CHN program.

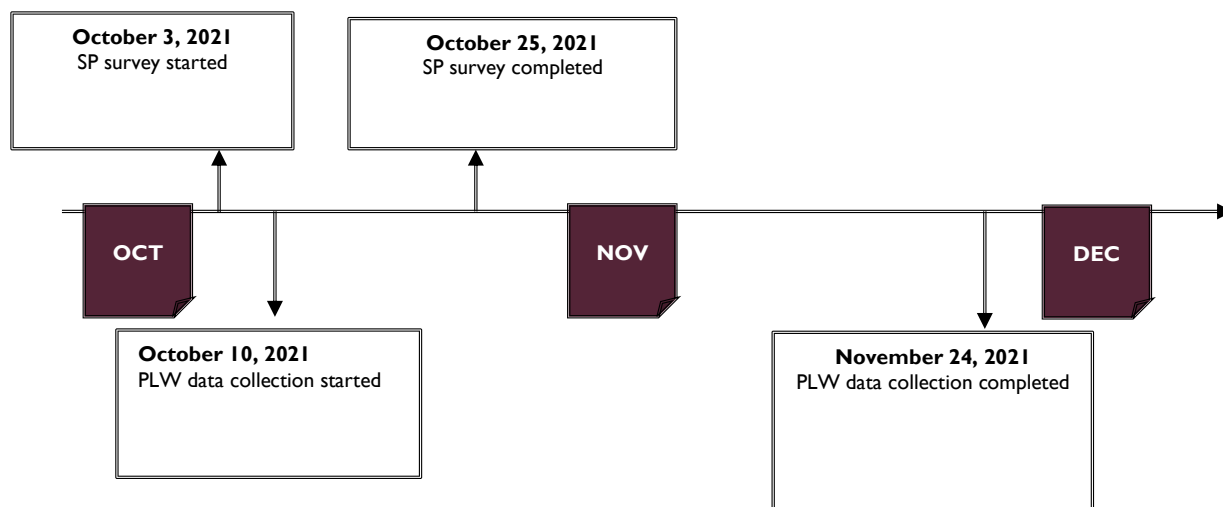


Figure 2. Baseline data collection timeline

4.6 Baseline Survey Coverage – Location and Number of PLW Survey

A full list of the number of surveys per facility for the PLW and SP surveys are shown in **Figure 4**, **Table 6**, and **Table 7**.

4.7 Quality Control

All questionnaires were pretested prior to finalization. Questionnaires were translated to Arabic, and translated back into English and verified as correct by two translators. During the survey, quality control visits were made by the JNIL post-doctoral fellow and Mindset’s operations team members throughout the duration of the survey. Supervisors at Mindset conducted daily meetings with the enumerators to review questionnaires for completeness and consistency and ensure that skip patterns were followed. Interviews were also randomly recorded to monitor enumerators. Quality control staff at Mindset also performed verification of key questions through telephone call-backs to at least 20% of the total participants. In addition, the quality control staff checked the accuracy of geospatial (GPS) coordinates for all surveys conducted. For incomplete surveys, missing responses, and inconsistencies, enumerators were either scheduled to return to the participant’s households to verify responses or performed telephone calls to complete the missing responses and inconsistencies.

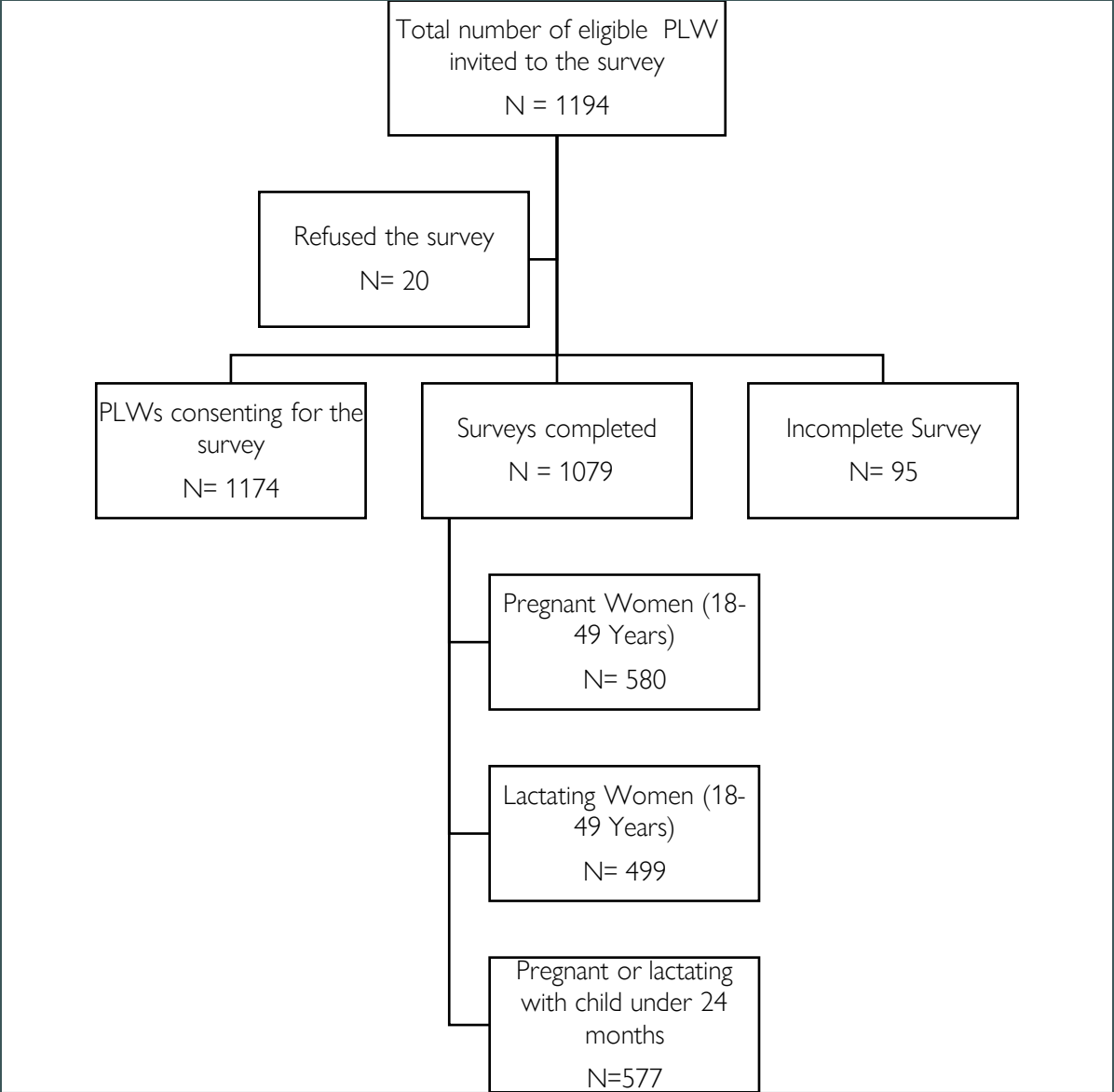


Figure 3: Consort Diagram for the Baseline PLW survey

Table 4. List of Completed Surveys Per facility – Baseline PLW survey

No	Governorate	Facility Name	Survey Completed (target: 45 PLW)
1	Amman	Al Quaismeh Comprehensive Health Center (CHC)	58
2		Um Nowara Primary Health Center (PHC)	78
3		Khriebt Al-Sook CHC	46
4		Muqabalin CHC	57
5		Al-Hayat General Hospital	22
6		Institute for Family Health (IFH) – Al- Quaismeh Clinic	62
7		Al-Basheer Hospitals – Obstetrics and Gynecology Hospital	44
8		Ob/Gyn clinic - Royal Hospital	2
9		Al-Maqased Hospital	52
10		Ob/Gyn clinic - Al-Maqased Hospital	52
11		Jabal Amman Hospital for Delivery	4
12		Islamic Charity Center Society (ICCS) - Al- Quaismeh clinic	49
13	Karak	Ghour Al-Safi PHC	50
14		Karak Governmental Hospital	59
15		IFH - Karak Clinic	52
16		“I-Clinic” Health Center	6
17		Al-Rabbah CHC	57
18		Ghour Al-Safi Hospital	43
19	Zarqa	Zarqa New Governmental Hospital	51
20		IFH – Zarka Clinic	50
21		Jabal Al-Zaytoon Hospital	23
22		ICCS –Al-Zarka Clinic	53
23		Iskan Al-Hashemiyah CHC	61
24		Al-Hashemiah PHC	48
Total			1079

Table 5. List of Completed Surveys per Facility – Baseline SP survey

No	Governorate	Facility Name	Surveys completed	Male	Female
1	Amman	Al Quaismeh Comprehensive Health Center (CHC)	4	0	4
2		Um Nowara Primary Health Center (PHC)	3	0	3
3		Khriebt Al-Sook CHC	3	0	3
4		Muqabalin CHC	3	0	3
5		Al-Hayat General Hospital	3	0	3
6		Institute for Family Health (IFH) – Al- Quaismeh Clinic	4	0	4
7		Al-Basheer Hospitals – Obstetrics and Gynecology Hospital	3	0	3
8		Ob/Gyn clinic - Royal Hospital	3	0	3
9		Al-Maqased Hospital + Ob/Gyn clinic - Al-Maqased Hospital	5	0	5
11		Jabal Amman Hospital for Delivery	3	0	3
12		Islamic Charity Center Society (ICCS) - Al-Quaismeh clinic	3	0	3
13		Karak	Ghour Al-Safi PHC	3	0
14	Karak Governmental Hospital		3	1	2
15	IFH - Karak Clinic		3	0	3
16	“I-Clinic” Health Center		2	0	2
17	Al-Rabbah CHC		3	0	3
18	Ghour Al-Safi Hospital		3	0	3
19	Zarqa	Zarqa New Governmental Hospital	3	0	3
20		IFH – Zarka Clinic	3	0	3
21		Jabal Al-Zaytoon Hospital	3	0	3
22		ICCS –Al-Zarka Clinic	1	0	1
23		Iskan Al-Hashemiyah CHC	3	0	3
24		Al-Hashemiah PHC	3	0	3
Total			70	1	69

4.8 Data Management and Analysis

At the completion of surveys, the data manager at Mindset performed the data management and processing. The process included verification of data collection utilizing quality control measures followed by assurance of data completeness, legibility, and consistency of collected data. This was done using syntax for all data checks in the SPSS statistical software. Next, for reliability and accuracy of collected data, verification of key questions through telephone call-backs were performed. This was done throughout the period of data collection and processing phase.

Data management included downloading and reviewing raw data in SPSS software. Data cleaning included generation of frequencies for categorical variables and median/means and 95% percentiles for quantitative raw variables. A complete dataset was submitted to the Tufts University team within 12 weeks of completion of data collection in the field.

4.8.1 *Statistical Analysis*

Both data from the PLW and SP survey underwent initial exploratory and descriptive analyses to quantify distribution of discrete and continuous variables. PLW data were analyzed to characterize CHN outcomes including infant feeding practices (exclusive breastfeeding rates, early initiation of breastfeeding, and introduction to complementary feeds) and maternal dietary diversity. In addition, we examined child nutritional status, indices of wealth, socio-demographic characteristics, and maternal nutrition status by geography. Length and height measurements were converted to z-scores (HAZ, WAZ, and WHZ) using 2006 growth standards. Multivariate logistic regression analyses were conducted on key primary outcome variables that included prevalence of i) early initiation of breastfeeding, ii) exclusive breastfeeding, iii) introduction of complementary feeding at 6-8 months, iv) minimum diet diversity in PLW, and v) low birth weight. Analyses were performed using STATA v.15 (StataCorp, College Station, TX, USA). While inferential analysis was conducted on the PLW data (to assess potential associations of interest), SP data were examined at a descriptive level only.

From the PLW data, outcome variables were computed. Outcome variable definitions were based on pre-defined CHN outcomes and existing definitions as recommended by the WHO. Below is a list of specific variables that were computed to assess the CHN outcomes:

1. Minimum Dietary Diversity in Women (MDD-W) is measured as an indicator of whether women 18-49 years of age had consumed at least five out of ten defined food groups the previous day or night. The proportion of women who achieved the minimum food groups can be used as a proxy indicator for higher micronutrient adequacy, an important dimension of diet quality²².
2. Early initiation of breastfeeding is measured as proportion of children born in the last 24 months that were put to the breast within one hour of birth²⁰.
3. Exclusive breastfeeding is measured as the proportion of infants under 6 months of age who are currently breastfeeding and did not receive any water, liquid, or foods in the past 24 hours²¹.
4. Median duration of exclusive breastfeeding refers to the age in months when 50% of children did not receive breast milk exclusively the previous day²¹.
5. Minimal acceptable diet (MAD) is defined as the proportion of breastfed infants and young children 6-23 months of age who had at least the minimum dietary diversity (MDD) and the minimum meal frequency (MFF) during the previous day. Infants and young children at 6-23 months must meet both MDD and MFF requirements to meet the MAD²¹.
6. Prevalence of modern contraceptive methods refers to percentage of currently married non-pregnant women aged 18-49 who used any modern contraceptive method. Modern contraceptive methods include male and female sterilization, injectables, intrauterine devices (IUDs), contraceptive pills, implants, female and male condoms, the lactational amenorrhea method, and emergency contraception²³.

In addition, we also computed and assessed the following outcome variables:

1. Ever breastfed: Refers to proportion of infants who have been put to breast, even if only once²¹.
2. Consumption of breastmilk substitutes: This is measured as consumption of milk, infant formula, and infant foods. Consumption of milk included fresh, powdered, or tinned animal milk.
3. MDD is defined as infants and young children who consumed 5 or more of the 8 food groups and were considered to have met the MDD requirement. The 8 food groups included in this indicator are: (1) breastmilk; (2) grains, roots, and tubers; (3) legumes and nuts; (4) dairy products; (5) meat, flesh, fish, poultry, and organ meats; (6) eggs; (7) vitamin A-rich fruits and vegetables; and (8) other fruits and vegetables²¹.
4. MMF is defined as the number of times a child receives meals, snacks, or milk feeds in the previous 24 hours, where the minimum threshold for adequate meal frequency depends on the child's age and breastfeeding status. Breastfed infants 6-8 months have a minimum of 2 meals or snacks and breastfed infants and young children 9-23 months of age have a minimum of 3 meals or snacks. Infants and young children 6-23 months of age who are not breastfed have a minimum of 4 meals, snacks, and milk feeds, where one must be solid or semi-solid food²¹.

Independent variables in our analysis include geographic locations (governorates and districts), mother's age, child's age, mother's educational status, household wealth quintile, and exposure to information on breastfeeding and IYCF practices. This allowed the analysis to assess the association of the key outcome variables with the education of the mother, age of the child, and socio-economic status. The wealth quintile variable was created from a principal component analysis with data on household assets, services, and amenities, and represents a household's wealth. Households were split into 5 groups that indicates households with (1) lowest, (2) second, (3) middle, (4) fourth, and (5) highest wealth quintile²³. **Table 8** provides a list of outcomes, independent and derived variables from the PLW data.

Table 6. List of Outcomes, Independent and Derived variables for the PLW Survey

Outcomes or Dependent Variables	Independent Variables
<ul style="list-style-type: none"> • Minimum Dietary Diversity in Women (MDD-W) • Early initiation of breastfeeding • Exclusive breastfeeding in infants 0-6 months • Median duration of exclusive breastfeeding in child under 6 months • Minimal acceptable diet (MAD) • Prevalence of Modern Contraceptive methods in PLW • Ever Breastfed • Consumption of breastmilk substitutes • Minimum dietary diversity (MDD) • Minimum meal frequency <p>Additional variables of interest:</p> <ul style="list-style-type: none"> • Nutritional status of children under 24 months <ul style="list-style-type: none"> ○ Low birth weight ○ Stunting (HAZ-score) ○ Wasting (WAZ-score) ○ Underweight (WHZ-score) • Nutritional status of non-pregnant women <ul style="list-style-type: none"> ○ Body Mass Index (BMI) ○ Waist-to-hip ratio (WHR) • PLW Knowledge on: <ul style="list-style-type: none"> ○ Maternal, health and nutrition ○ Infant and Young Child Feeding • Exposure to Programs and information on: <ul style="list-style-type: none"> ○ Diets in pregnancy & lactation ○ Early initiation of breastfeeding ○ Exclusive breastfeeding ○ Complementary & young child feeding ○ Modern contraceptive methods • PLW attitudes towards breastfeeding and diet 	<ul style="list-style-type: none"> • Geographic locations (Governorates; districts) • Mother's age • Infant's age, • Mother's educational status • Respondent's Nationality • Wealth quintile • CHN program cohort • Type of health sector (public vs private) • Type of health facility <ul style="list-style-type: none"> ○ Hospital ○ Comprehensive Health center ○ Institute of Family Health

The key variables utilized for the descriptive analysis of SP data are listed in **Table 9**.

Table 7. List of Variables Analyzed for the SP Survey

Outcomes or Dependent Variables	Independent Variables
<ul style="list-style-type: none"> • HCPs knowledge on IYCF practices <ul style="list-style-type: none"> ○ Breastfeeding practices ○ Complementary feeding practices ○ Diet and Nutrition of pregnant and lactating women ○ Family Planning and reproductive health • In-service training on: <ul style="list-style-type: none"> ○ IYCF counseling ○ Breastfeeding practices ○ Diets ○ Newborn care services • HCPs attitudes on: <ul style="list-style-type: none"> ○ Breastfeeding practices ○ IYCF practices ○ Maternal and child health practices ○ Reproductive health and family planning practices 	<ul style="list-style-type: none"> • Gender • Marital status • Higher education • Current Occupation • Department/Specialty • Health sector • Type of health facility • Area of employment (Districts; governorate)

5. Data Collection Challenges and Lessons Learned

5.1 Baseline Data Collection Challenges

Implementation Timeline

The baseline data collection was originally planned for September 14, 2021, following the training of the data collection team. However, based on the post-training feedback from the field team, the JNIL Tufts team recommended a refresher training session to capture the amendments made to the questionnaires and to receive additional training taking anthropometric measurements. The training on anthropometry measurements was first theoretical followed by practical/role play sessions where enumerators took measurements from volunteers. Following the first practical session, which also included measuring women and child volunteers, the research team recommended that an additional refresher training must be conducted to improve data collection team’s confidence in recording anthropometric measurements. For forthcoming surveys, the data collection team will consider the following:

- Develop a timeline with sufficient days for training and piloting of the survey tools. The team will also consider including sufficient time for submitting IRB amendments and ethical approvals.
- Although less likely in future surveys, delays in clearing the anthropometric measurement equipment on time was a challenge faced by the field team. Mindset will plan 3-4 months in advance for any local (in-country) or international purchases of study equipment and inform and coordinate with the Mission accordingly. These challenges are also less likely to occur since JNIL has an in-country team (country coordinator and a post-doc research fellow) to oversee the planning and preparation of the surveys, along with Mindset.

Field Data Collection

The challenges faced by the field team during the data collection in the health facilities are as follows:

- Securing space for data collection: Availability of a private, secured space within the facility to maintain privacy and confidentiality was an issue in some of the health facilities. Unfortunately, the team faced challenges coordinating with staff/personnel in some of the health facilities to accommodate the field team for data collection.
- Participants' time to complete the survey: Although the field team completed most surveys at the health facilities, several surveys had to be rescheduled, since the women's visit were for routine check-ups only. To overcome this challenge, the field team received consent from the women at the facility level and made home visits to complete the survey. The field team developed a plan to complete the consenting process and the anthropometric measurement at the facility level and then followed up with the participants through home visits to complete the survey. This approach was successful with a good response rate.

Health Facility Challenges

In addition, the field team faced several health facilities related challenges that have been highlighted below by facility in each governorate.

a. Health Facilities in Amman:

A total of 12 health facilities were targeted in Amman, of which three facilities posed challenges in adequate availability of private space for data collection. These included:

- Al Quaismeh Comprehensive Health Center (CHC), where private space made available by the facility was small and inconvenient for the data collection.
- Um Nowara Primary Health Center (PHC), where space was small and noisy which was challenging for respondents and enumerators.
- Muqabalin CHC, where the facility was not able to accommodate the data collection team in terms of providing a private space. However, a nearby community-based organization was rented, and the facility's staff were cooperative in terms of referring eligible respondents to the location where the data collection team was based.

In addition, there were facilities where the field team encountered very low traffic of PLW, and this was the major reason the target sample requirements were not achieved in certain health facilities. The data collection team compensated the remaining sample from other health facilities in the governorate to fulfill the target sample size. Namely, the facilities where only a limited number of pregnant and lactating women visit are:

- Al-Hayat General Hospital, where the flow of PLW visiting the facility was minimum and most patients visited the hospital for urgent delivery care services only.
- Ob/Gyn Clinic – Royal Hospital, where the hospital had eligible patients, but the staff were less supportive in supporting data collection. In addition, the hospital itself did not have maternal and child health unit and the PLW only visited the facility to undergo C-section, which made it very difficult for Mindset to recruit participants. Even with eligible respondents, the response rate was low due to high refusals.

- Jabal Amman Hospital for Delivery: The facility did not have a unit for maternal and child health. Like Royal Hospital, the majority of PLW visited the facility for delivery (childbirth/c-section) services, which made it extremely difficult to approach potential participants.

b. Health Facilities in Karak

Data collection took place in six health facilities in Karak governorate, of which only one facility was faced with challenges pertaining to the number of eligible participants. The “I-Clinic Health Center” had a low traffic of PLW visiting the facility and was a key challenge in achieving the target sample size.

c. Health Facilities in Zarqa

Similar to Karak, data collection was conducted in six health facilities in Zarqa. Challenges were faced in three health facilities included:

- Jabal Al-Zaytoon Hospital: The facility did not have a maternal and child health unit, and the space that was made available for the data collection team was inadequate for the team to conduct data collection. This facility was the most challenging of the three facilities in Zarqa.
- Islamic Charity Center Society ICCS – Al Zarqa Clinic: This facility is in ‘Zarqa Camp’ and is part of the UNICEF supported “Makani Program”. The facility only had two staff members operating in this facility that included a medical doctor and a lab technician. The space that was provided was inadequate to conduct data collection. Otherwise, there were no additional challenges with respect to availability of eligible respondents.
- Iskan Al-Hashemiyah CHC: The key challenge faced by the data collection team in this facility was the lack of space for the data collection team.

5.2 Lessons Learned

For health facilities that do not have adequate space for data collection in a secure and confidential manner, the data collection team will identify a nearby community-based organization where interviews and measurements can be administered privately.

With respect to ensuring that in the future we are able to recruit PLW in private health facilities (with the highest refusals), a proposed solution is to offer the option of a home visit to complete the survey.

6. Descriptive Characteristics

The JNIL baseline surveys comprised a total of 1079 PLW with infants and young children under 2 years of age, and 70 healthcare providers. This section will describe the sample for the PLW and SP surveys, respectively.

6.1. Pregnant and Lactating Women and Infants Under 2 Years of Age

As shown in **Table 10**, about half of the PLW were from Amman (49%), while the remaining half were equally distributed between Karak (25%) and Zarqa (26%). The number of respondents was highest in the

Al-Quaismeh district (33%), followed by Al-Qasbah districts in Zarqa (16%), Amman (16%), and Karak (15%), respectively. Al-Qasr/Rabbah and Al-Aghwar Al-Janoobieh/Ghour Al-Safi district had the lowest proportion of respondents (5% each), respectively.

The mean (SD) household size was 5.13 (\pm 2.2), with majority of households headed by males (98%). PLW were mostly Jordanian nationals (78%) followed by Syrians (19%). About 83% lived in an apartment, while 16% lived in a Dar, which means one's own home, dwelling, house, etc. Only 3% had no education, with the highest proportion of female respondents having attended 1st-11th grade (54%).

Over half of the female respondents aged 18-49 years were currently pregnant (54%) (Table 10). The mean (SD) age of the respondents was 28.73 (\pm 6.10) years. Similarly, over half of the respondents had a child under 2 years of age (53%) (Table 11). About 13% of women who were pregnant also had a child under 2 years of age. The mean (SD) age of the child was about 13 (\pm 7.53) months (Table 11). The gender distribution of infants and young children under the age of 2 was almost equal, with a slightly higher proportion of male versus female (51% vs 49%, respectively). About 26% of the infants in the sample (N=577) were under 6 months of the age (59% in Amman, 17% in Karak, and 24% in Zarqa).

Table 8. PLW Characteristics, Overall and by Governorate

Participant Characteristics	Amman N (%)	Karak N (%)	Zarqa N (%)	Overall N (%)
Total sample of PLW (18-49 years)	526 (49%)	267 (25%)	286 (26%)	1079
Pregnant women Aged 18-49 y	238 (41%)	190 (33%)	152 (26%)	580 (54%)
Non-pregnant/Lactating women Aged 18-49 y	288 (58%)	77 (15%)	134 (27%)	499 (46%)
Districts				
Al Quaismeh	356 (68%)	-	-	356 (33%)
Al-Qasabah in Amman	170 (32%)	-	-	170 (16%)
Al-Qasr /Rabbah	-	57 (21%)	-	57 (5%)
Al-Aghwar Al-Janoobieh /Ghour Al-Safi	-	50 (19%)	-	50 (5%)
Al-Qasabah in Karak	-	160 (60%)	-	160 (15%)
Al-Hashemiyah	-	-	109 (38%)	109 (10%)
Al-Qasabah in Zarqa	-	-	177 (62%)	177 (16%)
Household size, Mean (SD)	5.2 (2.25)	4.94 (2.19)	5.18 (2.14)	5.13 (2.2)
Type of health facility interviewed:				
Hospital	122 (23%)	102 (38%)	74 (26%)	298 (28%)
Comprehensive Health Center	161 (31%)	57 (21%)	61 (21%)	279 (26%)
Primary Health Center	78 (15%)	50 (19%)	48 (17%)	176 (16%)
IFH	165 (31%)	58 (22%)	103 (36%)	326 (30%)
Type of health sector visited:				
Public	332 (63%)	209 (78%)	112 (39%)	653 (61%)
Private	194 (37%)	58 (22%)	174 (61%)	426 (39%)
CHN program cohorts				
Cohort 1	260 (49%)	63 (12%)	154 (54%)	477 (44%)

(11 facilities)				
Cohort II (10 facilities)	217 (42%)	161 (60%)	84 (29%)	462 (43%)
Back-up (3 facilities)	49 (9%)	43 (16%)	48 (17%)	140 (13%)
Age of PLW, Mean (SD)	28.32 (6.11)	29.66 (6.35)	28.63 (5.78)	28.73 (6.10)
Education status of PLW				
No Education	20 (4%)	11 (4%)	6 (2%)	37 (3%)
Grade 1-11	294 (56%)	138 (52%)	150 (52%)	582 (54%)
Completed secondary	134 (25%)	61 (23%)	88 (31%)	283 (26%)
Completed higher education	78 (15%)	57 (21%)	42 (15%)	177 (16%)
Nationality				
Jordanian	380 (72%)	221 (83%)	236 (83%)	837 (78%)
Syrian	120 (23%)	44 (16%)	41 (14%)	205 (19%)
Egyptian	5 (1%)	2 (1%)	3 (1%)	10 (1%)
Palestinian	12 (2%)	0 (0)	6 (2%)	18 (2%)
Other Arab	9 (2%)	0 (0)	0 (0)	9 (1%)
Wealth Quintile				
Lowest	125 (24%)	51 (19%)	50 (17%)	226 (21%)
Second	111 (21%)	42 (16%)	53 (19%)	206 (19%)
Middle	102 (19%)	57 (21%)	56 (20%)	216 (20%)
Fourth	85 (19%)	54 (20%)	60 (21%)	216 (20%)
Highest	85 (16%)	63 (24%)	67 (23%)	215 (20%)

Table 9. Sample Characteristics of Infants and Young Children Under Two, by Governorate

Characteristics	Amman N (%)	Karak N (%)	Zarqa N (%)	Overall N (%)
Total sample of infants under 24 months	325 (56%)	96 (17%)	156 (27%)	577 (53%)
Age of infants and young children in months, Mean (SD)	13.1 (7.55)	13.03 (7.69)	12.78 (7.44)	13 (7.53)
Age Category				
Less than 6 months	88 (59%)	25 (17%)	37 (25%)	150 (26%)
6 to <12 months	81 (54%)	24 (16%)	44 (29%)	149 (26%)
12 to <18 months	80 (54%)	28 (19%)	40 (27%)	148 (26%)
18 to <24 months	76 (58%)	19 (15%)	35 (27%)	130 (22%)
Gender (Female)	160 (57%)	37 (13%)	85 (30%)	282 (49%)

6.2 Healthcare Providers (HCPs)

The JNIL baseline survey comprised of 70 HCPs across the three governorates. All HCPs except one were female (**Table 12**). The mean age of the HCPs was 37.55 (\pm 10.04) years. Around three quarters (76%) of the HCPs were married. The mean years of education completed by HCPs was 16.41 (\pm 2.26) years. About half of the HCPs had completed diploma level while the remaining HCPs had university graduate (41%) and

postgraduate level education (7%). A total of 40% of the HCPs were nurses, 35% midwives, 17% doctors, and the remaining were dietitians, section head, and a lab technician in the facility. The mean and median years of working as a HCP was 12.17 (\pm 9.62) years and 9 years, respectively.

More than half of the service providers (54%) were from Amman, while the remaining were from Karak (23%) and Zarqa (23%). Similarly, over half of the HCPs (53%) were employed in the public sector (hospital & health center). About 41% were providing services in hospitals, 23% each in comprehensive health centers and private clinics/hospitals, and 13% at the primary health centers. Twenty three percent of the HCPs were providing services in private clinics.

Table 10. Sample Characteristics of Healthcare Providers, by Governorate

Healthcare providers (HCPs) Characteristics	Amman (N=37)	Karak (N=17)	Zarqa (N=16)	Overall (N=70)
Gender (Female)	37 (54%)	16 (23%)	16 (23%)	69 (99%)
Mean age (in years)	38.1 (10.15)	35.88 (10.06)	38.06 (10.24)	37.55 (10.04)
Marital Status: Married	27 (51%)	13 (24.5%)	13 (24.5%)	53 (76%)
Mean (SD) number of years of education completed, including primary level	16.29 (2.33)	15.88 (2.11)	17.25 (2.17)	16.41 (2.26)
Highest formal education obtained:				
Postgraduate (MS, MD, PhD)	3 (8%)	1 (6%)	1 (6%)	5 (7%)
University graduate	17 (46%)	4 (24%)	8 (50%)	29 (41%)
Undergraduate	0%	0%	1 (6%)	1 (1%)
Diploma but not undergraduate	17 (46%)	12 (70%)	6 (38%)	35 (50%)
Current Occupation				
Doctor	6 (16%)	2 (12%)	4 (25%)	12 (17%)
Nurse	16 (43%)	6 (35%)	6 (38%)	28 (40%)
Dietitian	1 (3%)	1 (6%)	0%	2 (3%)
Midwife	12 (32%)	8 (47%)	5 (31%)	25 (36%)
Others (lab tech, hospital manager)	2 (5%)	0%	1 (6%)	3 (4%)
Department/Specialty				
Maternal & Child Health	8 (33%)	5 (63%)	4 (36%)	17 (40%)
Obstetrics & Gynecology	4 (17%)	2 (25%)	2 (18%)	8 (19%)
Pediatrics	4 (17%)	1 (13%)	0%	5 (12%)
Other (more than one department, emergency, prematurity and newborn, medical labs, quality assurance, etc.)	8 (33%)	0%	5 (45%)	13 (30%)
Works in more than one department	4 (50%)	0%	1 (20%)	-
Premature and newborn care	3 (38%)	0%	1 (20%)	-
Medical lab	1 (13%)	0%	0%	-

Emergency division	0%	0%	2 (40%)	-
Quality Assurance	0%	0%	1 (20%)	-
Health Sector				
Public	16 (43%)	12 (71%)	9 (56%)	37 (53%)
Private	21 (57%)	5 (29%)	7 (44%)	33 (47%)
Type of Health Facility				
Hospital	17 (46%)	6 (35%)	6 (38%)	29 (41%)
Private Clinic	7 (19%)	5 (29%)	4 (25%)	16 (23%)
Comprehensive Health Center	10 (27%)	3 (18%)	3 (19%)	16 (23%)
Primary Health Center	3 (8%)	3 (18%)	3 (19%)	9 (13%)
Districts				
Al-Qwiesmeh (Amman)	23 (62%)	-	-	23 (33%)
Al Qasabah (Amman)	14 (38%)	-	-	14 (20%)
Al Qasr/Al-Rabbah (Karak)	-	3 (18%)	-	3 (4%)
Al-Aghwar Al Janoobieh/Ghour Al-Safi (Karak)	-	6 (35%)	-	6 (9%)
Al Qasabah (Karak)	-	8 (47%)	-	8(11%)
Al Qasabah (Zarqa)	-	-	10 (63%)	10 (14%)
Al-Hasemiyah (Zarqa)	-	-	6 (37%)	6 (9%)

7. Infant and Young Child Nutrition

Key Findings

- 91% of children under 24 months are breastfed at some point in their life.
- 57% of newborns were put to breast within the first hour of their life (early initiation of breastfeeding).
- Only about 35% of infants under 6 months are exclusively breastfed. Rates of exclusive breastfeeding were highest in Zarqa (54%) and lowest in Karak (16%).
- The median duration of exclusive breastfeeding was 1.3 months.
- More than two-third infants were introduced to complementary foods prior to 6 months of age.
- Only about one-fourth of children aged 6-23 months met the Minimum Acceptable Diet).
- Just about 14% of children had low birthweight, with higher percent distribution in Karak (20%), followed by Zarqa (17%) and Amman (11%).
- Women with higher education were 79% less likely to have infants with low birth weight.

This section first describes the feeding practices, including breastfeeding and complementary feedings practices, that are important to ensure optimal nutrition for infants and young children. The second part of the section discusses the nutritional status of children under 24 months.

7.1 Infant and Young Child Feeding (IYCF) Practices

IYCF practices include indicators like child ever breastfed, early initiation of breastfeeding, exclusive breastfeeding under 6 months, duration of breastfeeding and exclusive breastfeeding, introduction of complementary foods at 6-8 months, introduction to infant formula (breastmilk substitutes), minimum meal frequency, minimum diet diversity, and minimum acceptable diet in children 6-23 months.

7.1.1 Child Ever Breastfed

Ever breastfed refers to children under 24 months who have been put to the breast, even if only once¹. In this analysis, the indicator was computed using all infants under 24 months (n=577). Almost all infants were breastfed (91%), even if only once. The rates of ever breastfed across the three governorates were 96% in Karak, 92% in Zarqa, and 89% in Amman (**Figure 5**).

7.1.2 Early Initiation of Breastfeeding

Early initiation of breastfeeding is defined as provision of mother's breastmilk to infants within one hour of birth²⁴. In this analysis, the indicator was computed using all infants under 24 months (n=525). About three in five children (57%) in the survey were put to the breast within one hour of birth (early initiation). Across the governorates, the rates of early initiation of breastfeeding were 61% in Amman, 59% in Karak, and 47% in Zarqa. (Figure 5).

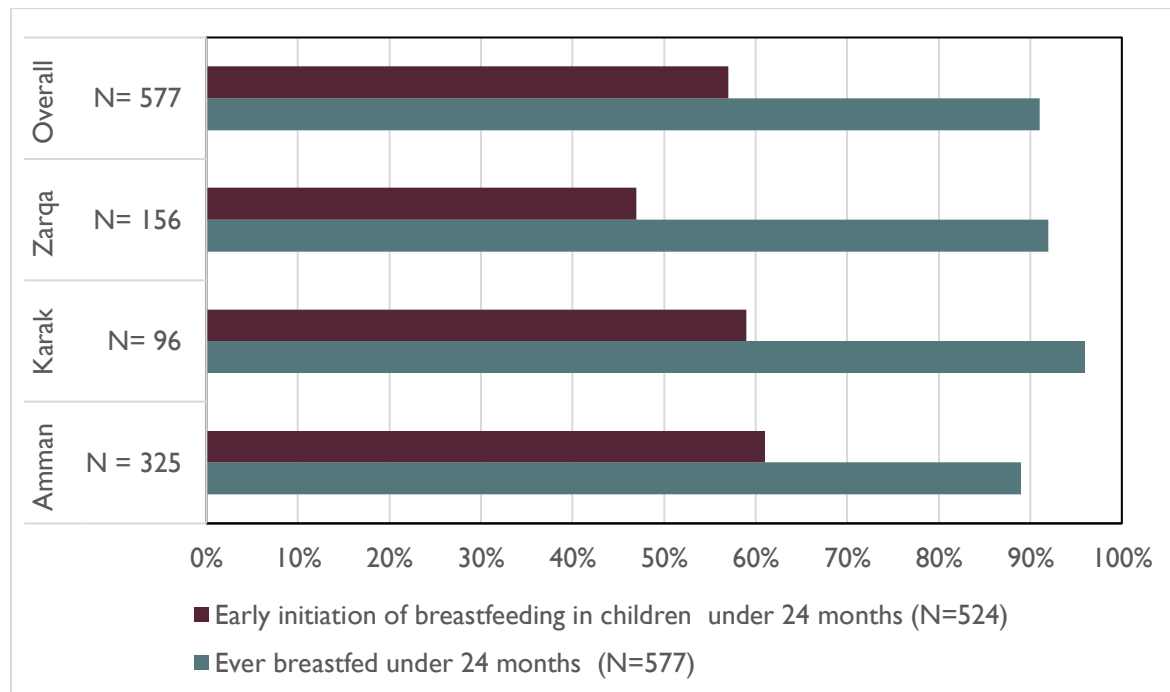


Figure 4. Proportion of Ever Breastfed and Early Initiation in children under 24 months

7.1.3 Exclusive Breastfeeding (EBF)

Exclusive breastfeeding (EBF) is defined as the proportion of infants under 6 months of age who received only breast milk and did not receive any water, liquid, or foods in the past 24 hours²¹. It is recommended that infants be exclusively breastfed in the first 6 months of their life²⁵. In this analysis, the indicator was computed on infants under 6 months of age (n=151).

In infants under 6 months of age (n=151), the rates of exclusive breastfeeding were 35%. Rates of exclusive breastfeeding were highest in Zarqa (53%), followed by Amman (33%), with Karak having the lowest rates at 16% (Figure 6). Figure 7 shows that in this sub-sample, exclusive breastfeeding declines rapidly with age. It declined from 50% in infants under 2 months to 16% in infants at 4-5 months. When examining disaggregated data by governorate, rates of exclusive breastfeeding show a gradual decline in Zarqa (from 50% in children under 2 months to 47% in infants at 2-4 months and 38% in infants at 4-5 months). However, there is a rapid decline in the rates of exclusive breastfeeding in Amman and Karak (Figure 7), especially between the age of 2-4 months to 4-5 months.

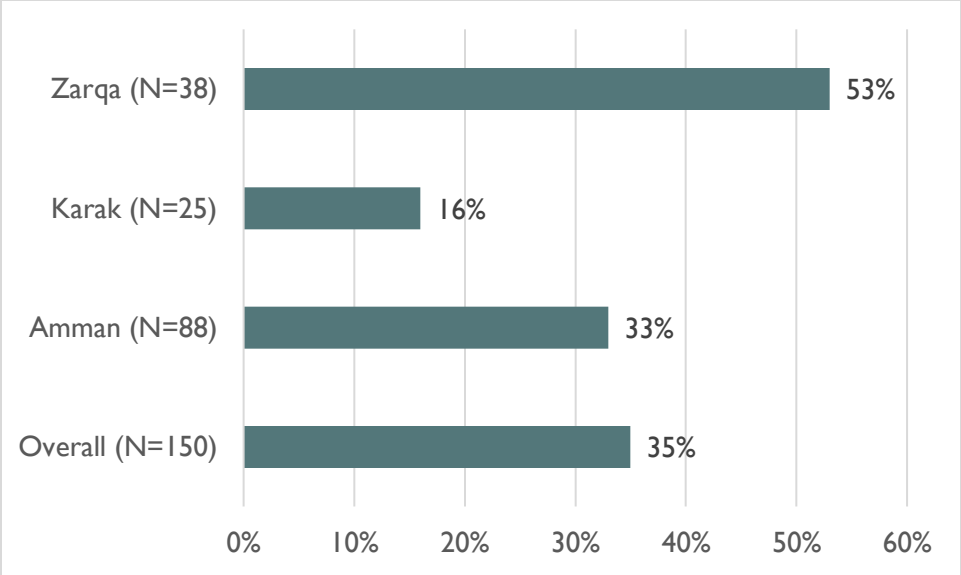


Figure 5. Exclusive breastfeeding rates for children under 6 months, overall and by governorate

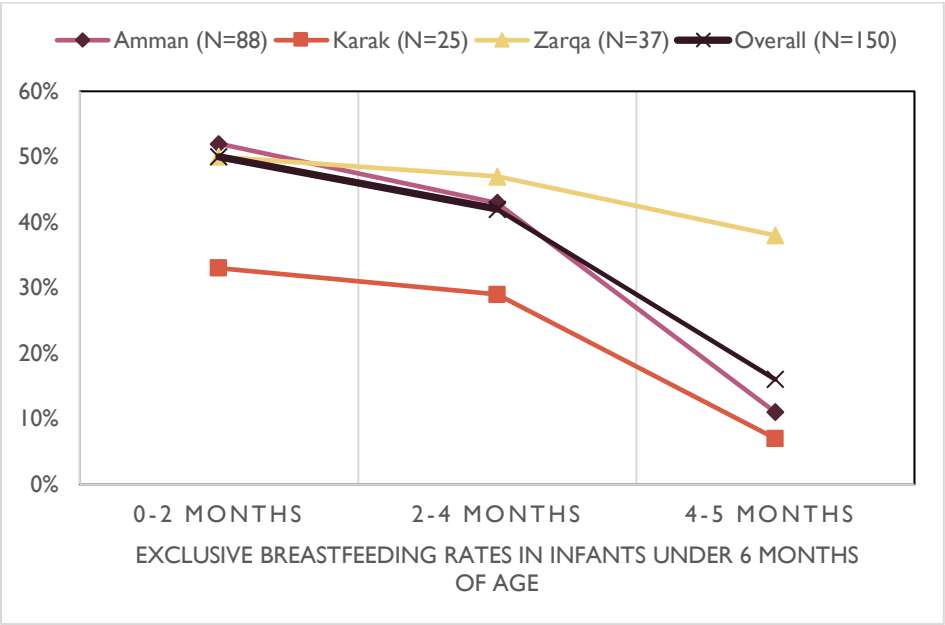


Figure 6. Exclusive breastfeeding rates for children under 6 months, by age group, overall and governorate

7.1.4 Median Duration of Any Breastfeeding and Exclusive Breastfeeding Under 6 Months

The computation of median duration was undertaken as recommended by the WHO. It should be noted that there are two separate indicators, i) median duration of exclusive breastfeeding in infants under 6 months of age and ii) median duration of breastfeeding in infants from 0-36 months of age. For this analysis and given the sample was only infants under 2 years of age, the second indicator was computed on infants from 0-24 months of age.

The median duration of exclusive breastfeeding in infants currently 0-6 months of age was 0.9 months. Across the governorates, the median duration of exclusive breastfeeding was 2.66 months in Amman and 4.68 months for Zarqa. Median duration for Karak was less than a month. However, the sample size of infants under 6 months of age in Karak was very small.

The median duration of any breastfeeding was computed in all infants under 24 months and was 12.67 months in children under 24 months of age. The median duration of any breastfeeding is highest in Amman (12.73 months) followed by Zarqa (10.56 months). In Karak, the median duration of any breastfeeding was about 14.59 months.

7.2 Factors Associated with Breastfeeding Practices

We examined factors associated with key breastfeeding practices including i) early initiation of breastfeeding and ii) exclusive breastfeeding in infants under 6 months of age. Factors examined included mother's age, education, birth order, geographic location, household wealth (wealth quintile), exposure to information on breastfeeding, and breastfeeding after childbirth within the health facility.

Mothers who received information on early initiation of breastfeeding were 1.8 times more likely to breastfeed immediately or within one hour of the birth (OR:1.84 95% CI: 1.19-2.73). Mothers aged 35-49 years were 57% less likely to initiate early breastfeeding compared to younger mothers aged 18-25 years (OR: 0.43 95% CI: 4.15-13.47). Full regression results are reported in **Table 34** in [Annex A](#).

Mothers who were exposed to information on exclusive breastfeeding practices were 3.1 times more likely to exclusively breastfeed (OR:3.1 95% CI: 1.10-8.52). A significant association ($p < 0.05$) was found between the odds of being exclusively breastfed and birth order of the child. Infants who were 4th or 5th in the birth order were 7.47 times (OR:7.48 95% CI: 1.27-43.99) and 17 times (OR:17.38 95% CI: 1.49-203.20), respectively, more likely to be exclusively breastfed compared to the first-born child. In terms of geographical location, women in Amman (Al-Hashemiyah district) were 39 times more likely to exclusively breastfeed (OR:39.03 95% CI: 1.98-768.61) compared to women in Karak (Al-Aghwar Al -Jonoobieh/Ghour Al-Safi district). Full regression results are reported in **Table 35** in [Annex A](#).

7.3 Complementary Feeding in Infants and Young Children 6-23 Months

7.3.1 Introduction of Complementary Foods in Infants 6-8 Months

According to the WHO, after the first six months, complementary foods should be added to the child's diet since breastmilk is no longer enough to meet the nutritional needs of an infant. Complementary feeding should be timely starting from 6 months onwards. Using WHO recommended definitions, the introduction of complementary feeding was calculated as proportion of infants 6-8 months of age who receive solid, semi-solid, and soft foods²⁶.

Figure 8 show that one-in-three infants (32%) between 6-8 months were introduced to complementary foods between the ages of 6-8 months. The proportion was similar across the three governorates.

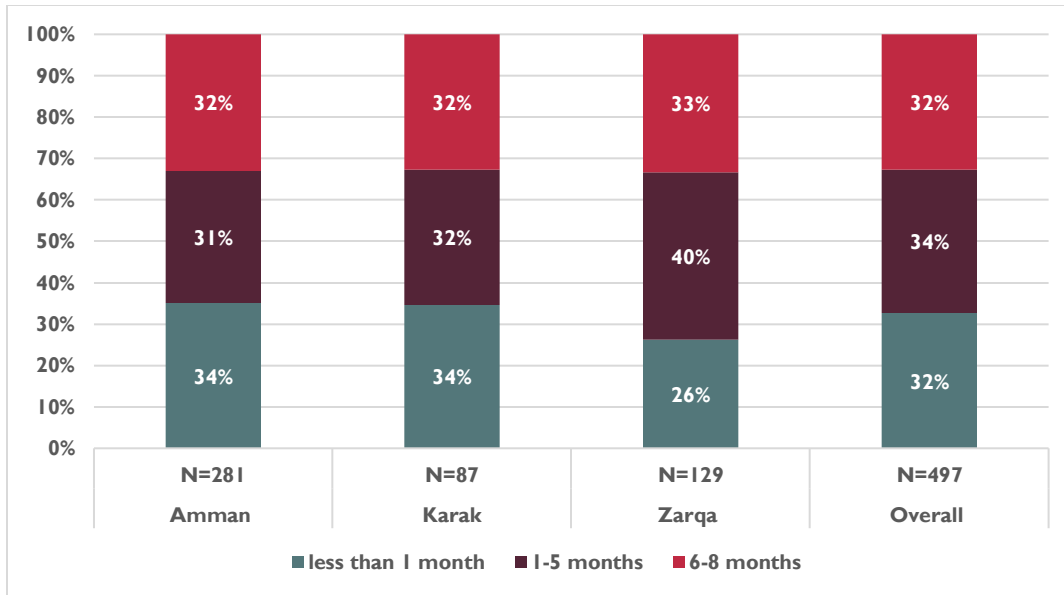


Figure 7. Age of introduction to complementary foods, overall and by governorate

7.3.2 Introduction to Infant Formula

In this section, we computed the proportion of the age of infants when they were first introduced to infant formula. In the overall sample of children under 24 months (N=499), about 38% of infants were introduced to infant formula within one month of age (Figure 9). Forty two percent of children under 1 month of age in Amman, followed by Karak (41%), and Zarqa (29%) were introduced to infant formula.

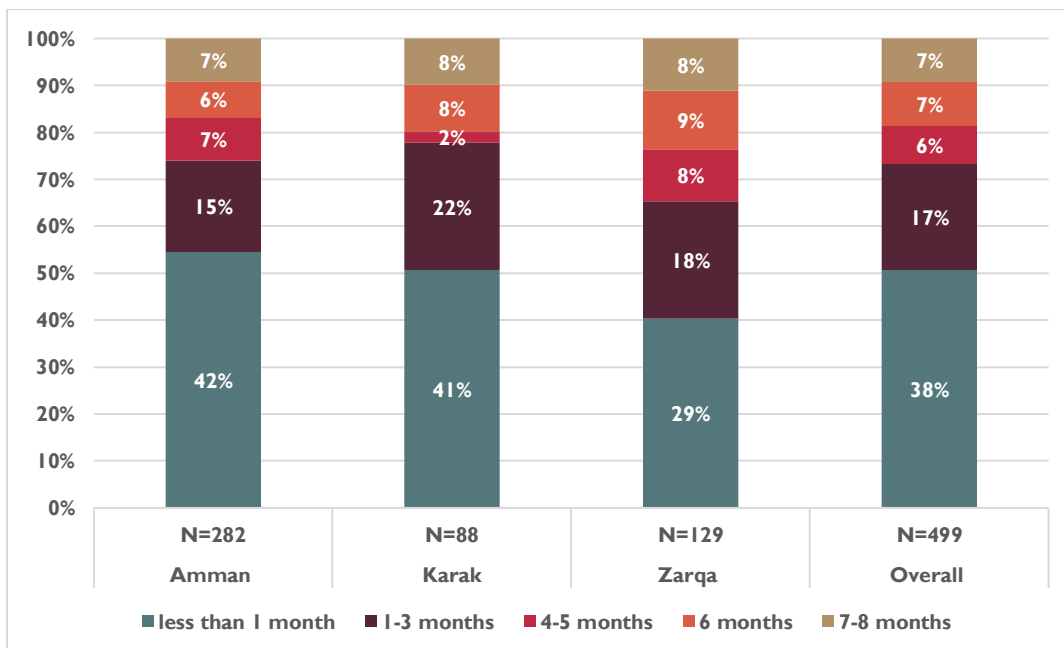


Figure 8. Introduction to infant formula, overall and by governorate

7.4 Minimum Acceptable Diet (MAD)

This section presents percent distribution of infants and young children 6-23 months (n=427) that achieved minimum meal frequency, minimum diet diversity, and minimum acceptable diet. To ensure optimal growth of infants and young children, they should be fed with a minimum acceptable diet. According to the WHO recommendation, the minimum acceptable diet varies between breastfed and non-breastfed children.

Infants and young children between 6-24 months who consumed 5 or more of the 8 food groups are considered to have met the minimum dietary diversity MDD requirement²⁷. The eight groups included in this indicator are (1) breastmilk; (2) grains, roots, and tubers; (3) legumes and nuts; (4) dairy products; (5) meat, fish, poultry, and organ meats; (6) eggs; (7) vitamin A-rich fruits and vegetables; and (8) other fruits and vegetables. Only one-third of infants and young children 6-23 months met the MDD. MMF is the number of times a child receives meals, snacks, or milk feeds in the previous 24 hours and is a proxy of child's energy requirements²⁷.

Minimum Acceptable Diet is defined as the proportion of breastfed infants and young children 6-23 months of age who had at least met the MDD and MMF during the previous day. Infants and young children aged 6-23 months must meet both MMF and MDD requirements to meet the MAD²⁷.

As shown in **Figure 10**, just about one in five (16%) children aged 6-23 months met the MAD. Fifty one percent met the MMF and 35% have an adequately diverse diet. Across the governorates, 18% of infants and young children in Amman, 14% in Zarqa, and 14% in Karak met the MAD.

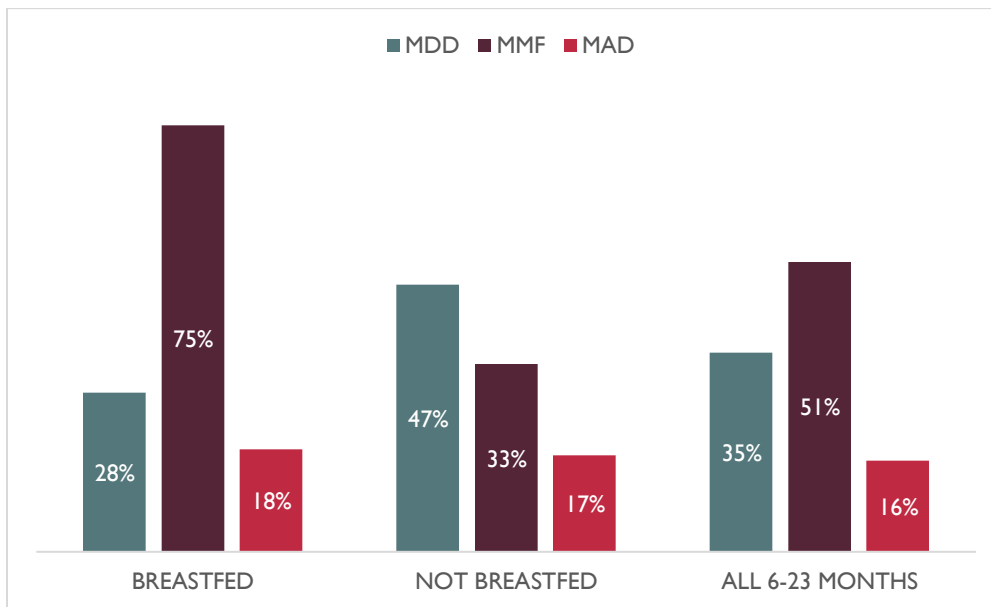


Figure 9. Percentage of infants achieving MMF, MDD & MAD, by breastfeeding status

Across the three governorates, the proportion of children receiving the minimum acceptable diet was highest in Amman (18%), while lower in in Zarqa (14%) and Karak (14%).

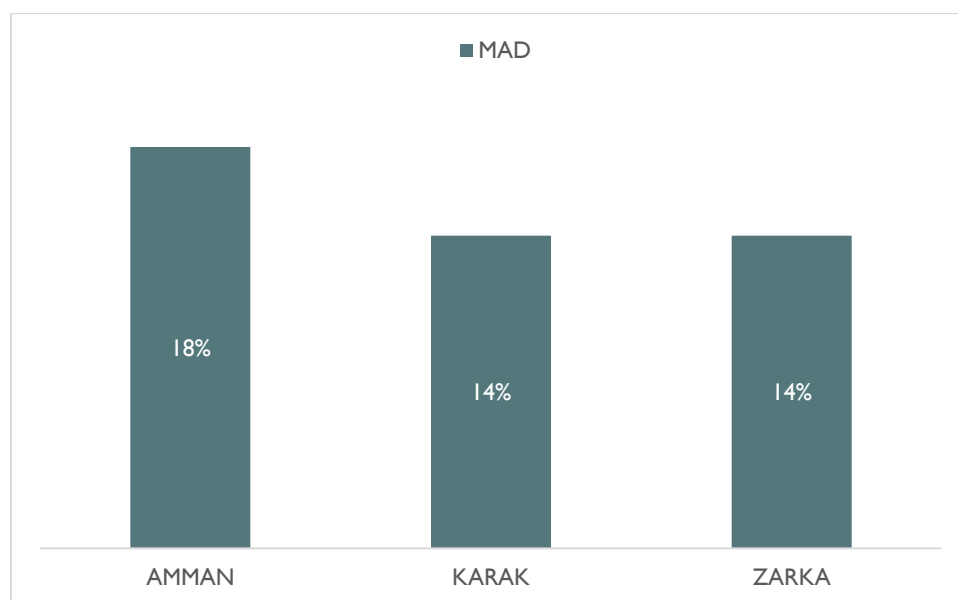


Figure 10. Percentage of infants 6-23 months of age that achieved Minimum Acceptable Diet by governorate

Nutritional Status of Children Under 24 Months

This section presents information on the reported birthweight and factors associated with low birthweight (LBW), and presents findings on the nutritional status of children under 24 months of age.

The mean reported birthweight was 3.05 (± 0.65) kilograms. Across all children, just about 14% of children were reported as low birth weight (less than 2500 grams at birth). Newborns in Karak (20%) had higher rates of LBW, compared to Zarqa (17%) and Amman (11%). Babies born to mothers between 18-24 years old and 35-49 years old had higher rates of low birth weight (19% and 16%) compared to women at 25-34 years old (11%). The percentages of low birth weight were higher in the 7th or more child in the birth order. Rates of LBW was higher in women who had little, or no education, compared to those with higher education (36% vs 9%, respectively) (Table 13).

Table 11. Maternal and Child Characteristics and Newborn Birthweight

Characteristics	% Low birth weight (weight less than 2500 grams) (N=570)	Chi-Square
All children	14%	
Governorate		0.039*
Amman	11%	
Karak	20%	
Zarqa	17%	
Maternal Age		0.134
18-24 years	16%	
25-34 years	11%	

35-49 years	19%	
Birth order		0.808
First child	15%	
Second child	14%	
Third child	12%	
Fourth child	12%	
Fifth child	12%	
Sixth child	17%	
Seventh child	23%	
Eighth child and above	24%	
Mother's education		0.003**
No education	36%	
Grade 1-11	16%	
Completed Secondary Education	10%	
Completed Higher Education	9%	

Chi-square are shown in the table above; *p<0.05; **p<0.01; ***p<0.001

7.5 Factors Associated with Low Birth Weight (LBW)

Factors examined were districts, wealth, maternal age, and maternal education. The odds of LBW were 78% less likely in mothers with higher education compared to mothers with no education (OR: 0.2195% CI: 0.06-0.778) (Figure 12).

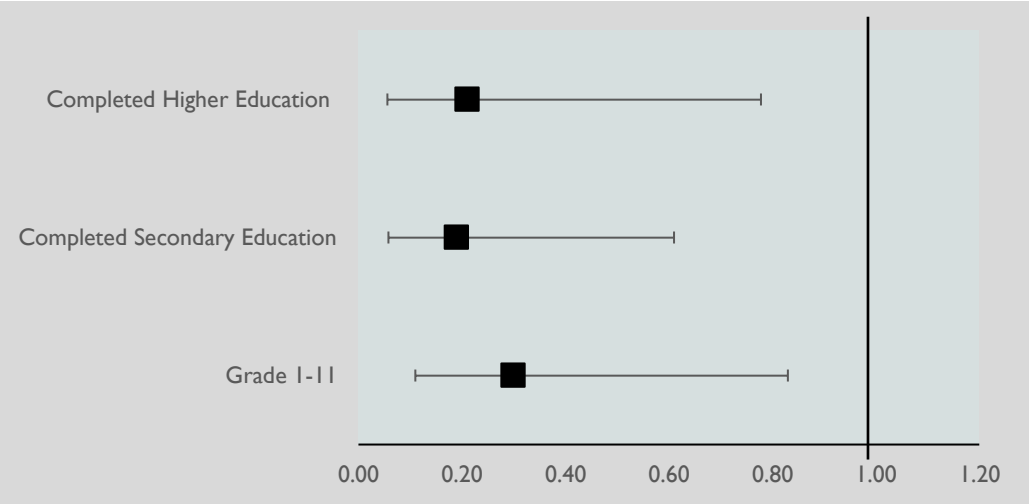


Figure 11. Association of maternal education and LWB

8. Women's Nutritional Status

Key Findings

- Over half (55%) of the pregnant women met MDD-W. Across the governorates, percent distribution of MDD-W was highest in Karak (63%), followed by Zarqa (54%) and Amman (50%).
- About 48% of non-pregnant (lactating) women met MDD-W. Over half of the women in Karak (52%) met MDD-W, while 49% women in Zarqa and 46% in Amman met MDD-W.
- Compared to non-pregnant women, a higher percentage of pregnant women consumed micronutrient-rich food groups that included dairy (76% vs 66%), poultry, meat, & fish (55% vs 48%), eggs (40% vs 34%), dark green leafy vegetables (31% vs 26%), vitamin A rich fruits and vegetables (28% vs 14%).
- The mean BMI of non-pregnant women (n=499) in the survey was 27.69 (\pm 5.9) kg/m²
- Overall prevalence of overweight in non-pregnant women was 36%, with higher prevalence in Karak (39%) and Amman (37%), while obesity was highest in Zarqa at 33%.
- More than half of the non-pregnant women in Karak were categorized as high health risk group, measured by waist-to-hip ratio (WHR).

This section presents baseline findings on the diet and nutritional status of women of reproductive age (18-49 years old) of the three CHN targeted governorates. Diet diversity indicators was measured using Minimum Dietary Diversity for Women (MDD-W) and association of diet diversity by sociodemographic characteristics was examined. The baseline survey also collected anthropometric data on height and weight, waist, and hip circumference. These data were used to calculate measures of nutritional status such as maternal BMI (for non-pregnant women), waist circumference, and WHR.

8.1 Diet Diversity in Women

The Minimum Dietary Diversity for Women (MDD-W) was computed for each woman aged 18-49 years old based on her consumption of ten food groups. Women who consumed at least five of the ten possible food groups over a 24-hour recall period were classified as having minimally adequate diet diversity²⁸. The ten food groups required for the MDD-W are (1) grains, roots, and tubers; (2) pulses; (3) nuts and seeds; (4) dairy; (5) meat, poultry, and fish; (6) eggs; (7) dark leafy greens and vegetables; (8) other vitamin A-rich fruits and vegetables; (9) other vegetables; (10) other fruits.

In the overall sample of women of pregnant and non-pregnant/lactating women (n=1079), the mean (SD) MDD-W score was 4.63 (\pm 1.75). Mean (SD) MDD-W score for pregnant women was 4.77 (\pm 1.74) (**Table 14**). Across the governorates, the mean (SD) MDD-W scores for pregnant women were 4.58 (\pm 1.68) for Amman, 5.16 (\pm 1.78) for Karak, and 4.59(\pm 1.71) for Zarqa. Amongst non-pregnant women, mean (SD)

MDD-W score was 4.47(±1.75). Across the governorates, the mean (SD) MDD-W scores for non-pregnant women were 4.39 (±1.76) for Amman, 4.57 (±1.84) for Karak, and 4.59 (±1.68) for Zarqa.

Table 12. Minimum Diet Diversity in Women (MDD-W), by Pregnancy Status and by Governorate

Women MDD-W	Amman	Karak	Zarqa	Overall
Pregnant	N=238	N=190	N=152	N=580
Mean (SD)	4.58 (1.68)	5.16 (1.78)	4.59 (1.71)	4.77 (1.74)
Non-Pregnant	N=288	N=77	N=134	N=499
Mean (SD)	4.39 (1.76)	4.57 (1.84)	4.59 (1.68)	4.47 (1.75)

As shown in **Figure 13**, 55% of pregnant women achieved MDD-W. Across the three governorates, a higher proportion of women in Karak (63%) met the MDD-W, followed by Zarqa (54%) and Amman (50%). Amongst the non-pregnant women, only 47% met MDD-W. Across the governorates, a higher proportion of non-pregnant women in Karak (52%) met MDD-W, followed by Zarqa (49%) and Amman (46%).

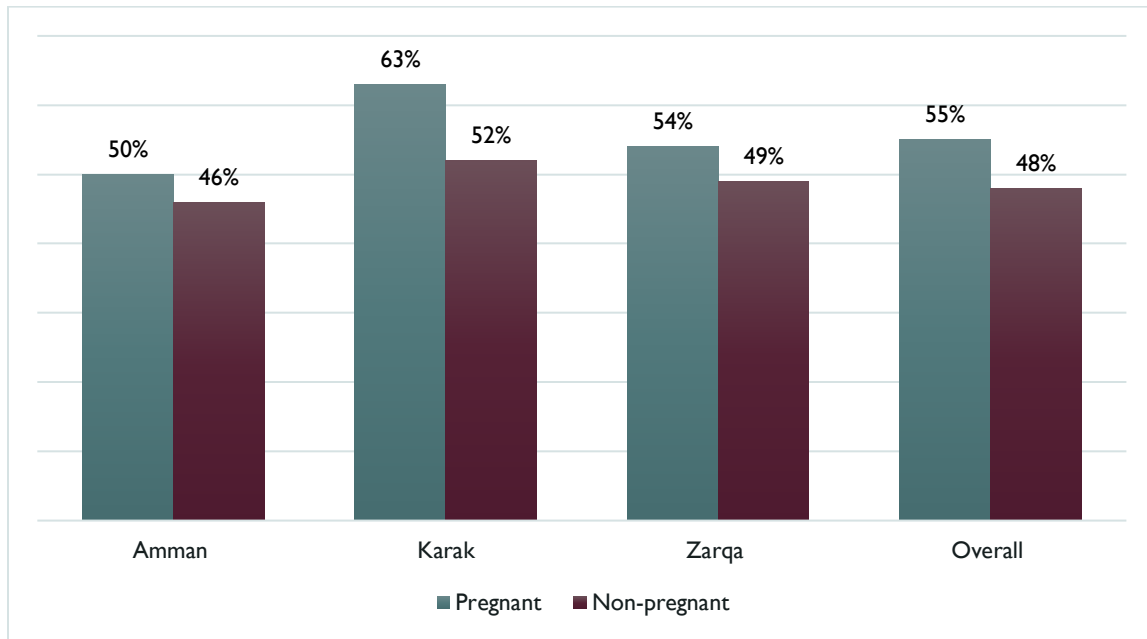


Figure 12. Minimum Diet Diversity in reproductive age group women, by pregnancy status and governorate

While the proportion of women consuming staple food groups was similar, a significantly greater proportion of pregnant women consumed dairy products (66% vs 76%), meat, poultry, fish, organ meats (48% vs 55%), eggs (34% vs 54%), dark leafy green vegetables (26% vs 32%), vitamin A-rich fruits, and vegetables (14% vs 28%) (**Figure 14**).

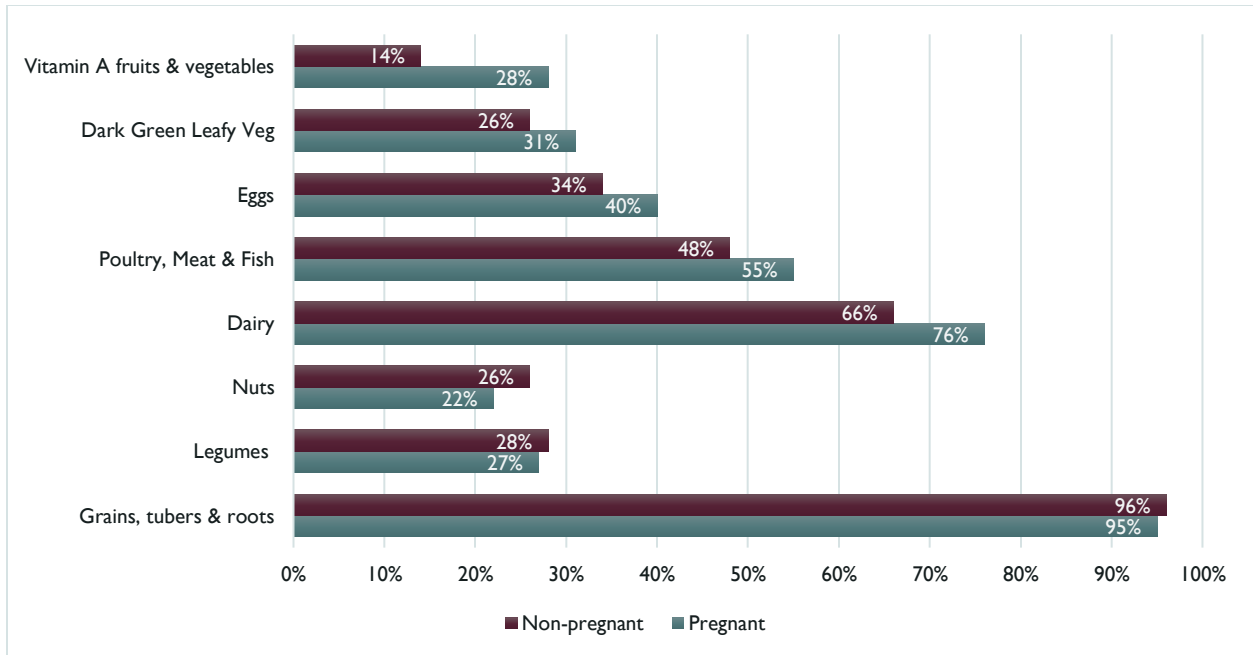


Figure 13. Food Groups Consumed by PLW, by pregnancy status

8.2 Factors Associated with Maternal Dietary Diversity

As shown in Figure 15, there were significant differences in women who achieved MDD-W by socio-economic status, irrespective of pregnancy status.

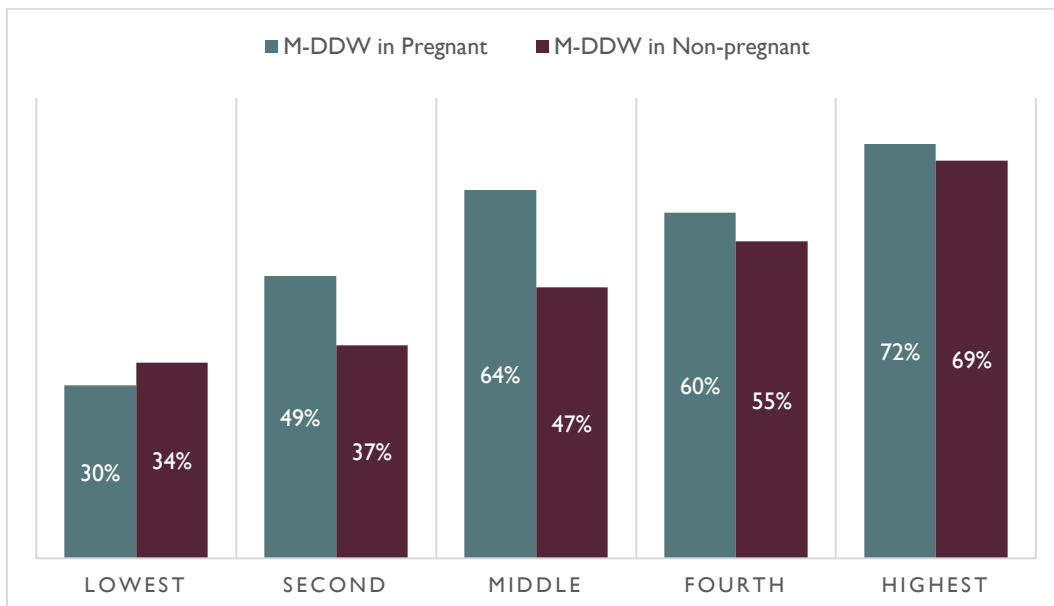


Figure 14. Distribution of MDD-W, by wealth and pregnancy status

Significant socio-economic differences were observed in pregnant women, especially for nuts and seeds, dairy, meat, poultry and organ meat, vitamin A-rich fruits or vegetables, eggs, and other fruits. Similarly, significant

differences were observed in non-pregnant women for meat, poultry and organ meat, dairy, nuts and seeds, and other fruits.

We examined the association of MDD-W and factors such as mother's age, education, geographic location, household wealth (wealth quintile), maternal education, and exposure to information on dietary intake in pregnant and lactating women. Pregnant women who received information on diets and nutrition during pregnancy were 1.5 times more likely to meet the MDD-W (OR:1.56 95% CI: 1.03-2.35). Similarly, pregnant women from a higher wealth quintile were more likely to meet MDD-W compared to pregnant women from a poorer quintile. Full regressions results are presented in **Table 36** in [Annex A](#).

Similarly, background characteristics associated with MDD-W in non-pregnant women were examined. Non-pregnant and/or lactating women who received information on dietary intakes were 1.72 times more likely to meet MDD-W (OR:1.72 95% CI: 1.04-2.86) compared to women who did not receive any information on diets. Compared to women from lower wealth quintiles, women from higher wealth quintiles were 1.98 times (OR:1.98 95% CI: 1.11-3.56), and women from highest wealth quintile were 3 times ((OR:3.02 95% CI: 1.56-5.85) more likely to meet MDD-W. Non-pregnant women who completed higher education were 4.4 times more likely to meet MDD-W (OR:4.42 95% CI: 1.22-15.99), compared to women with no or little education. Full regressions results are presented in **Table 37** in [Annex A](#).

8.3 Nutritional Status of Non-Pregnant Women

As shown in **Table 15**, the mean body mass index (BMI) of non-pregnant reproductive age group women of 18-49 years old (n=499) was 27.69 (\pm 5.9) kg/m². Underweight prevalence amongst women (defined by BMI < 18.5 kg/m² in non-pregnant women)³⁰ was very low at only about 3%. More than two-third (66%) of women are overweight or obese (66%). Prevalence of overweight (defined by BMI \geq 25 and <30 kg/m² in non-pregnant women³¹) was 36%, while prevalence of obesity (defined by BMI \geq 30 kg/m² in non-pregnant women)³¹ was 30%.

Additionally, obesity was divided into three separate categories of severity, as defined by the Center for Disease Control (CDC)³². Obesity Class 1 (low-health risk) was defined by BMI of 30 to <35 kg/m² in non-pregnant women; obesity Class 2 (moderate health-risk) was defined by BMI 35 to <40 kg/m² in non-pregnant women; and obesity Class 3 (morbid obesity with high health risk) was defined by BMI of 40 kg/m² or higher in non-pregnant women. Obesity Class I prevalence was 18%, Class 2 was 8%, and Class 3 was 4%. Across the three governorates, prevalence of overweight was highest in Karak (39%), followed by Amman (37%) and Zarqa (32%). Obesity Class I prevalence was highest in Zarqa (33%) followed by Amman (29%) and Karak (27%).

Table 13. Nutritional Status of Non-Pregnant Lactating Women, by Governorate

Women BMI	Amman	Karak	Zarqa	Overall
	N=288	N=77	N=134	N=499
BMI (kg/m ²) Mean (SD)	27.66 (6.02)	27.56 (5.20)	27.88 (6.13)	27.70 (5.92)
BMI Category				
Underweight (<18.5)	4%	1%	2%	3%
Normal (>=18.5 & <25)	30%	33%	34%	31%
Overweight (>=25 & <30)	37%	39%	32%	36%
Obese Class I	17%	18%	20%	18%
Obese Class II	9%	5%	7%	8%
Obese Class III	4%	4%	5%	4%

Waist circumference is the measurement of waist size in centimeters. High waist circumference is reflective of abdominal obesity³³. A waist circumference of more than 88 cm for females aged 18-49 years was categorized as central obesity, and less than 88 cm was categorized as normal³³. The mean waist circumference of non-pregnant women in the sample was 86.14 (± 12.65) cm. Forty percent of non-pregnant women of reproductive age were categorized with high waist circumference (central obesity). Across the three governorates, 42% of non-pregnant women in Amman, 45% in Karak, and 35% in Zarqa had high waist circumference (**Figure 16**).

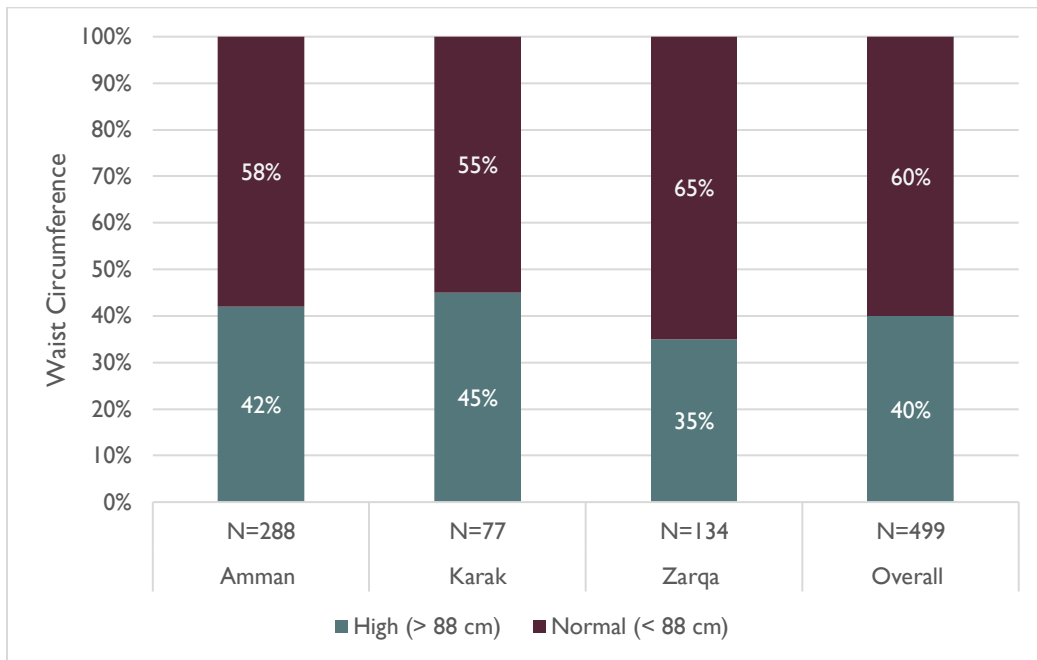


Figure 15. Waist circumference in non-pregnant lactating women, by governorate

Similarly, WHR was calculated to determine the body fat distribution in non-pregnant lactating women in the sample³³. A WHR less than 0.88 indicates low health risk, 0.88-0.84 indicates moderate health risk, and a ratio greater than 0.85 indicates high health risks. As shown in (**Figure 17**), based on WHR, 47% of the lactating women were classified as low health risk, 16 % as moderate health risk, and 37% as high health risk. Across

the governorates, percent distribution of high health risk WHR was 53% in Karak, 37% in Amman, and 27% in Zarqa.

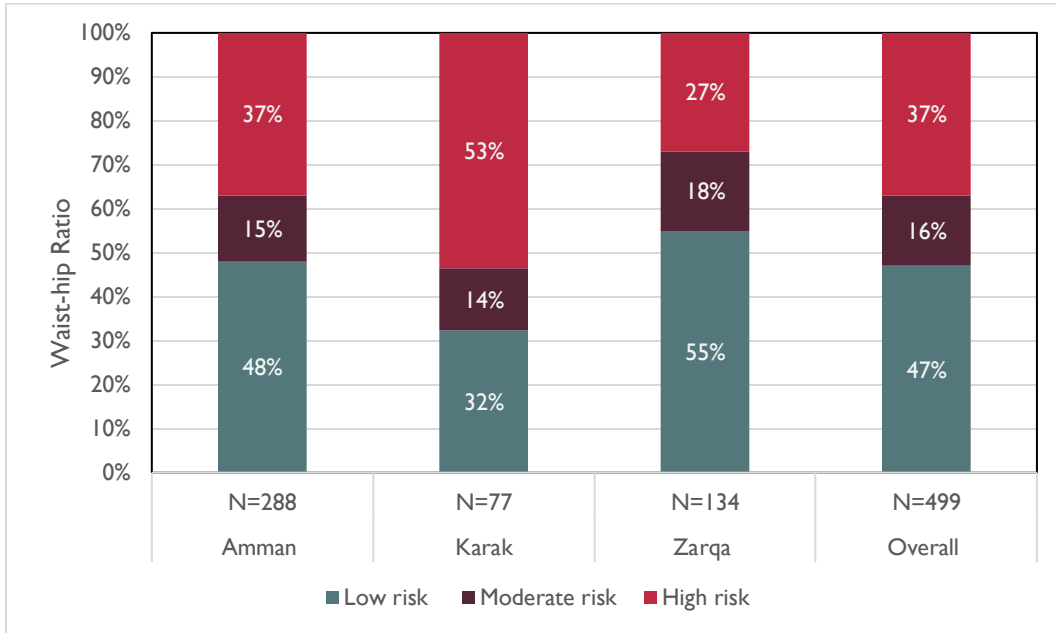


Figure 16. Waist-to-hip ratio in non-pregnant lactating women, by governorate

Figure 18 shows the percent distribution of WHR by BMI category in non-pregnant lactating women. About 41% of the overweight lactating women and almost half (49%) of the obese lactating women were under the high risk WHR category.

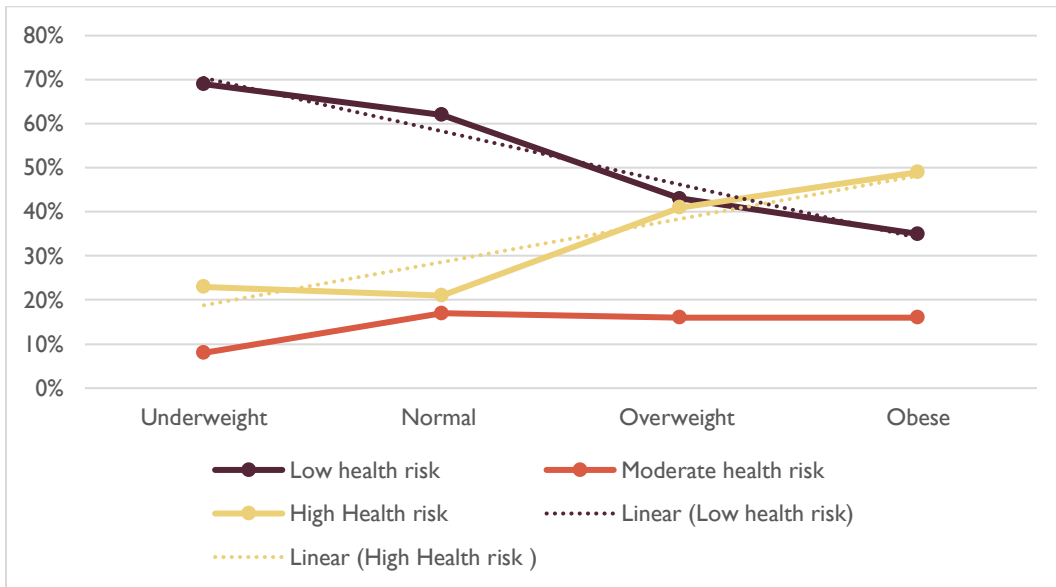


Figure 17. Distribution of Waist-Hip Ratio and Maternal BMI category in non-pregnant lactating women

9. Maternal and Newborn Care

Key Findings

- Almost half of the pregnant women started antenatal care (ANC) visits from their first month of pregnancy.
- Health facility's proximity and medical insurance coverage were common reasons for visiting the health facility for ANC services.
- More than half of the women delivered their child at a public hospital or health center (57%), while 31% delivered at a private hospital/clinic.

9.1 Antenatal Care

Antenatal care was computed for women who were currently pregnant (N= 579). Almost all pregnant women visited a health care provider at least once for ANC. Almost half (48%) of the pregnant women visited the health facility during their first month of pregnancy, while 89% made their first ANC visit in the first three months (first trimester) (Figure 19). About 47% visited a private health facility, while 45% visited a public health facility for their ANC visits.

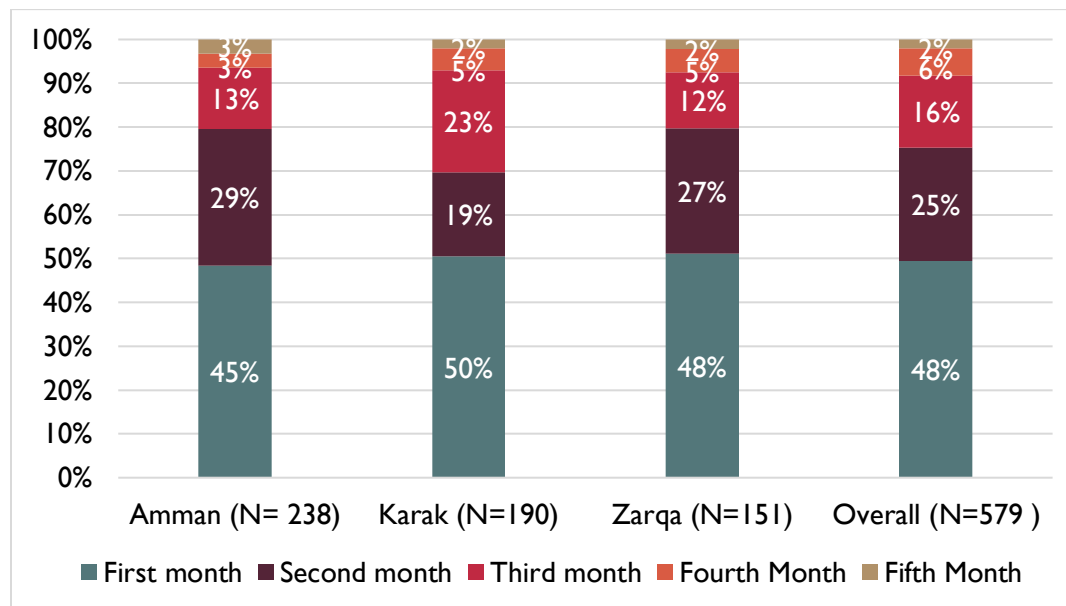


Figure 18. Antenatal care visits, by governorate

The number of ANC visits by pregnant women in the sample was categorized into three groups: 1-3 times; 4-6 times and more than 6 times (Figure 20). Overall, 41% of pregnant women had at least made 1-3 ANC visits, 31% had made ANC visits between 4-6 times, and 26% had made more than 6 ANC visits during their pregnancy. The majority of pregnant women (86%) were seen by obstetricians/gynecologists during their ANC visits, followed by family medicine specialists (7%), midwives (6%), and a general practitioner (6%).

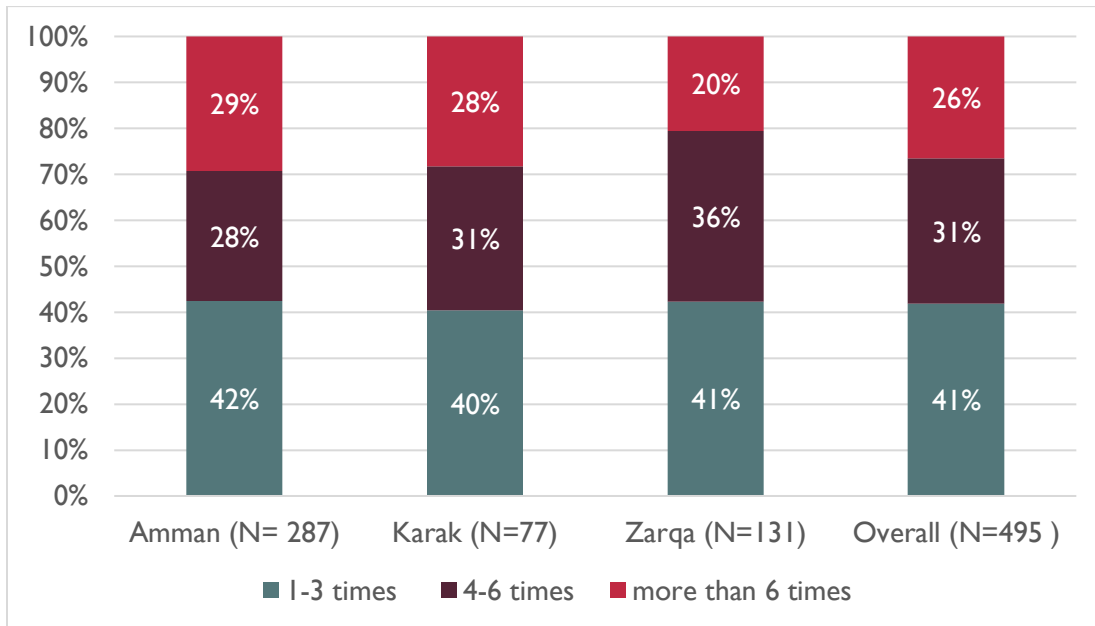


Figure 19. Number of ANC visits made by pregnant women, by governorate

Health facility's proximity (55%), health insurance coverage (41%), prior use of the health facility (30%), and recommendation by family (20%) were the common reasons for the respondent's decision to visit the health facility for ANC services (Figure 21).

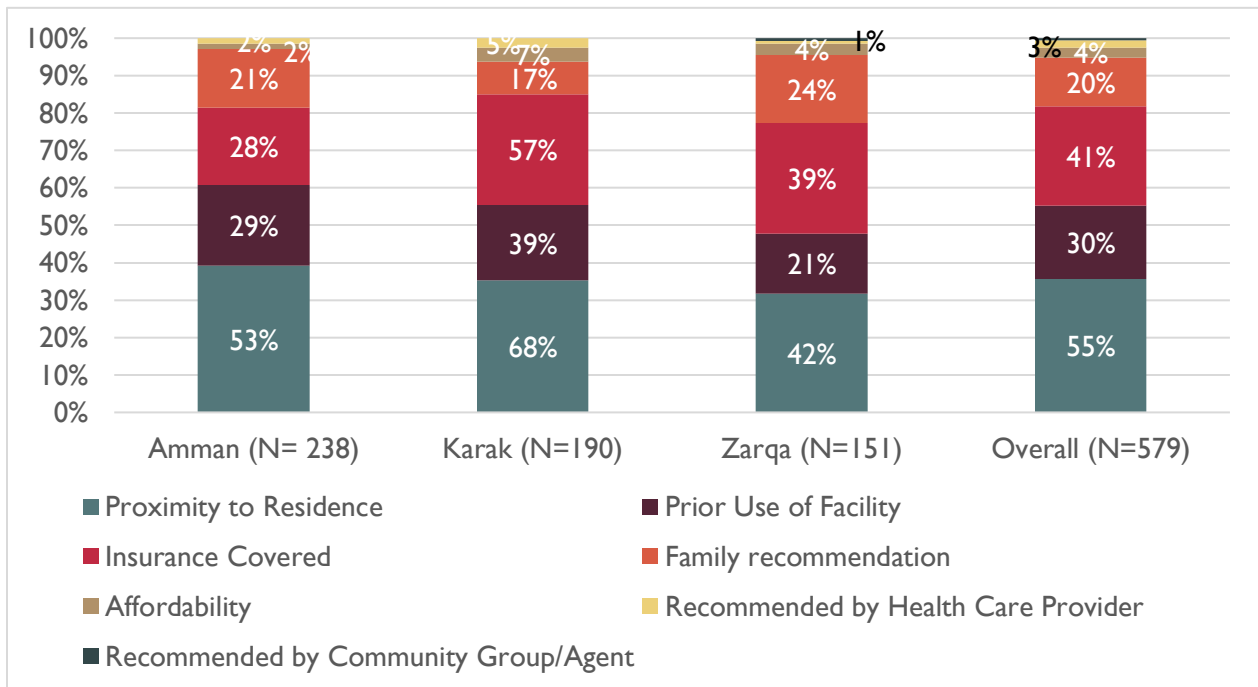


Figure 20. Reasons for selecting the health facility for ANC services, by governorate

9.2 Child Delivery Services

All women in the survey who had a child under 24 months at the time of interview (both pregnant and non-pregnant) were asked about the type of facility and type of delivery method (normal versus assisted caesarean), including whether the assisted delivery method was performed as routine or emergency deliveries.

Overall, more than half of the women delivered their child at a public hospital or a health center (57%), while 31% delivered at private hospital/clinics and 10% delivered at Royal Medical Services (RMS) hospital (**Figure 22**). About two-thirds of women in Karak (75%) delivered in a public facility while more than half of the women in Amman and Zarqa delivered in a public facility (55% and 51%, respectively). Deliveries in private facilities were highest in Amman (41%) followed by Zarqa (26%), and lowest in Karak (8%) (**Figure 22**).

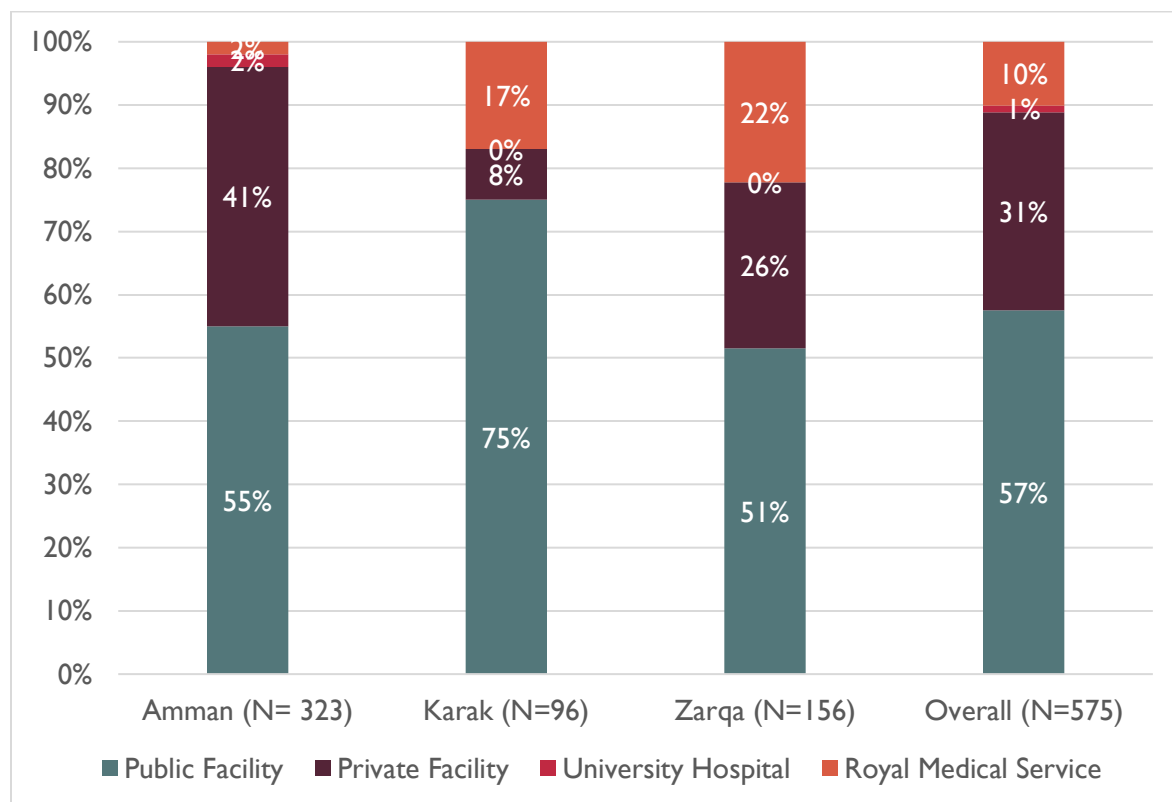


Figure 21. Type of health facility used for child delivery services, by governorate

About 41% of women delivered via a caesarean section. The proportion of women undergoing a caesarean section was similar across the three governorates (42% in Amman and Zarqa, and 36% in Karak). Of those who delivered via a caesarean section, more than two-thirds (68%) underwent a routine (or planned) caesarean section. Routine caesarean sections were highest among women in Zarqa (71%) and Amman (70%), followed by Karak (57%). The reasons for planning a routine caesarean section were chronic health condition (30%), doctor's recommendation (28%), prolonged labor (14%), abnormal fetal position (14%), and fetal distress (10%) (**Figure 23**).

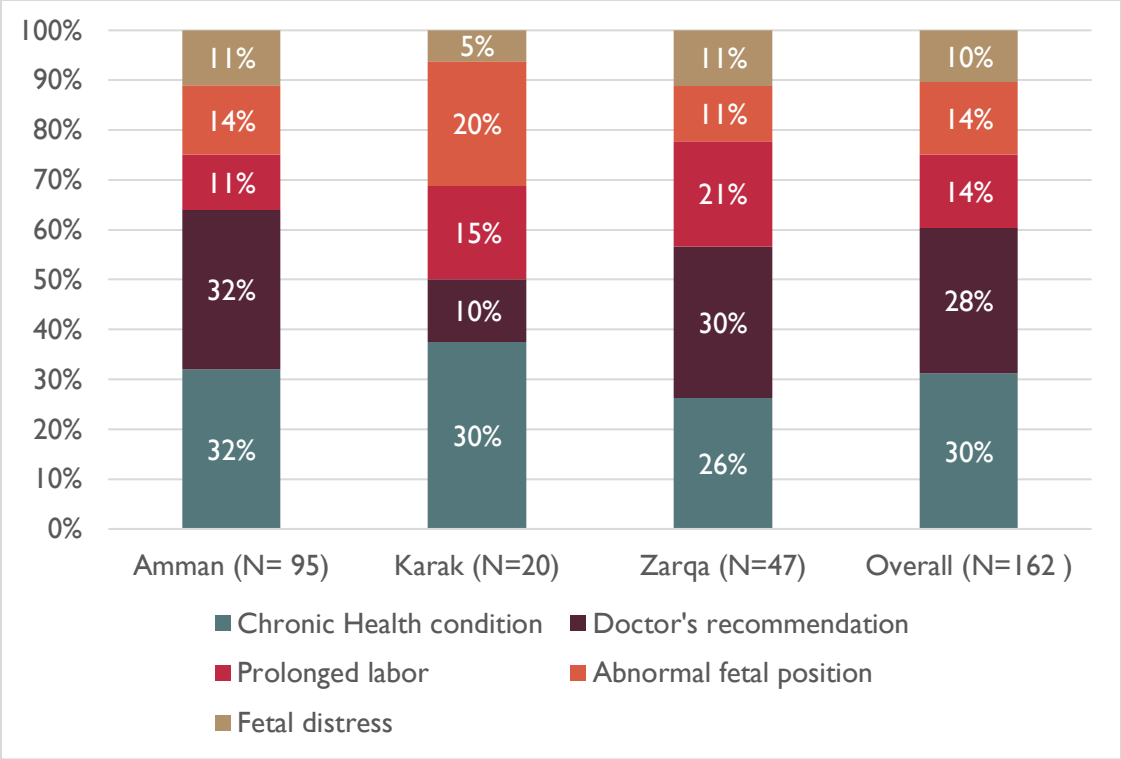


Figure 22. Reasons for undergoing routine caesarean section, by governorate

9.3 Post-Natal Care of Newborns

With respect to newborn care practices (Table 16), respondents were asked about bare skin touch, rooming in, breastfeeding prior to leaving the health facility, and whether the healthcare providers recommended use of infant formula (Table 16).

Table 14. Newborn Care Practices at the Health Facility Level

Newborn care practices at the health facility	Amman (N= 325)	Karak (N=96)	Zarqa (N=156)	Overall (N=577)
Child was put on mother's chest immediately after birth (Yes)	62%	55%	47%	57%
Skin-to-skin contact (1 st hour after birth) (Yes)	64%	57%	51%	59%
Rooming-in (Yes)	66%	77%	60%	66%
Started breastfeeding at the health facility (Yes)	76%	82%	83%	79%
Infant formula provided by the healthcare provider (Yes)	51%	56%	63%	55%

About 57% of new mothers put their newborn on the chest immediate after birth, 59% performed skin-to-skin contact, and 66% performed rooming-in (where the mother-child remain in the same room for 24 hours post-delivery). About 79% reported to have breastfed their newborn before leaving the health facility. The proportion was higher in Zarqa (83%) and Karak (82%), followed by Amman (76%). The proportion was similar across public (77%) and private (80%) health facility (Table 16). More than half (55%) of the

women that reported facility delivery also received infant formula from the healthcare provider prior to being discharged from the health facility. Across the three governorates, the proportion of women who received infant formula from HCPs was higher in Zarqa (63%) compared to Karak (56%) and Amman (51%). The proportion was higher amongst women who delivered at the private health facilities (63%) compared to public health facilities (51%) (**Table 16**).

10. Family Planning and Reproductive Health

Key Findings

- About three quarters of all non-pregnant lactating women used any form of contraception, with 53% using modern contraceptive methods (MCMs).
- Percent use of oral contraceptive pills and IUDs were higher than other forms of contraception
- About one-fourth (23%) of women used traditional withdrawal method as a preferred contraceptive method.

This section presents information on use of contraceptive methods, source of MCMs, common MCMs used, and common reasons for not using MCMs. The findings are presented for non-pregnant/lactating women with children under 24 months (n=495).

10.1 Use of Contraceptive Methods in Currently Married Non-Pregnant Women

The percentage of non-pregnant lactating women aged 18-49 years old that used any contraceptive method (MCM and traditional method) was 74%. Fifty three percent of women use “modern contraceptive methods (MCMs)” (Figure 24). MCMs include male and female sterilization, injectables, intrauterine devices (IUDs), contraceptive pills, implants, female and male condoms, and the lactational amenorrhea method (LAM). Prevalence rate of MCMs across the three governorates are 52% in Amman, 52% in Karak, and 56% in Zarqa (Figure 24).

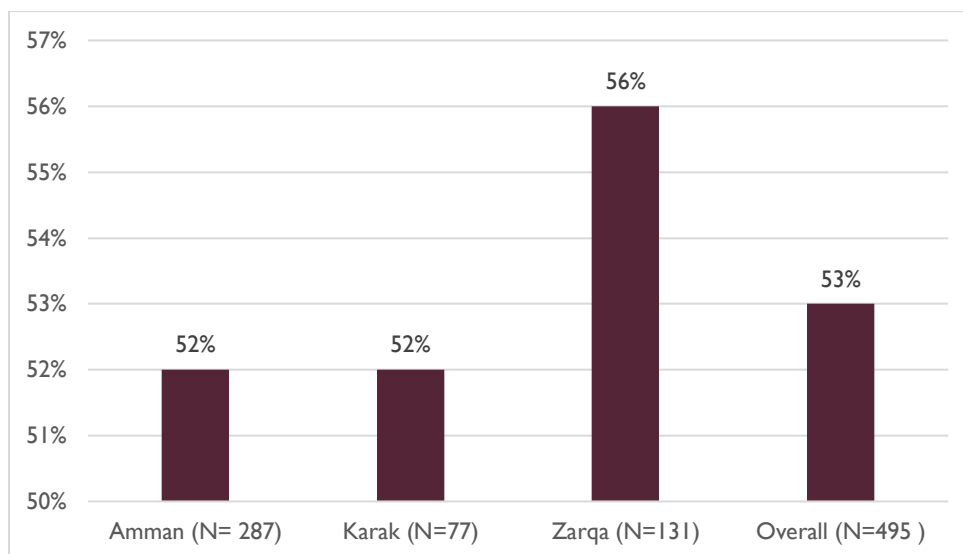


Figure 23. Use of any MCMs by non-pregnant women, by governorate

Table 15. Distribution of Modern Contraceptive Method Currently Used, by Age Category of Non-Pregnant Women

Age Group (in years)	Distribution (N=485)	Any MCM Use	Type of MCM methods used (N=368)			
			Oral pills	IUDs	Injectables	Male condoms
18-25	27%	51%	27%	15%	9%	19%
25-35	54%	52%	28%	18%	10%	19%
35-49	19%	57%	21%	24%	8%	24%

Table 17 provides the age-wise distribution of reported use of MCMs in non-pregnant women in the sample (n=485). Prevalence rate of MCMs in women of 18-25 years was 51%, 25-35 years was 52%, and 35-49 years was 57%. As shown in **Figure 25** and **Table 17**, oral contraceptive pills/OCPs (27%) were the most common method used across all age groups, followed by intrauterine devices/IUDs (20%) and injectables (9%). Condoms (20%) were a common method used by husbands or partners. About 23% of women still relied on traditional withdrawal method of contraception. OCPs were commonly used in Amman (27%) followed by the withdrawal method (25%). The withdrawal method (26%) and male condoms (21%) were commonly used in Karak. OCPs and IUDs were commonly used by women in Zarqa.

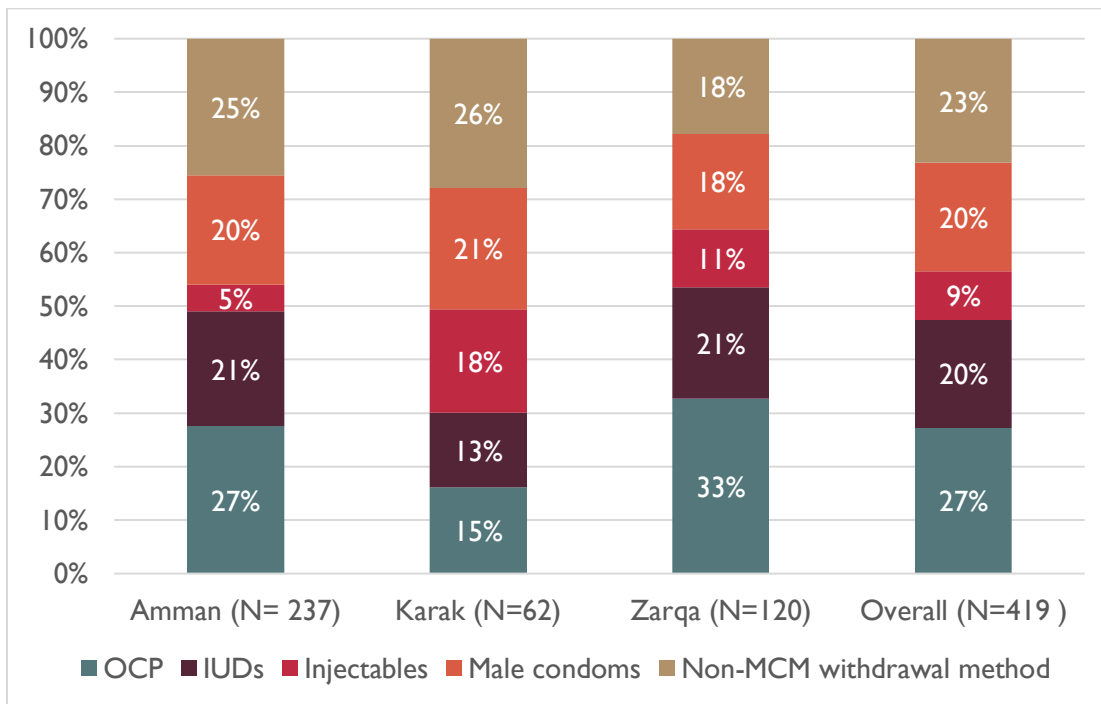


Figure 24. Type of family planning methods used by women or their partners, by governorate

10.2 Reasons for Not Using Family Planning

Figure 26 presents the prevalence of non-pregnant women not using any methods. Twenty eight percent of women not using any family planning method were planning a pregnancy, 13% was afraid of the side effects

and health concerns of MCMs, 12% had infrequent sexual habits, and 10% had opposition from male partners on use of contraceptive methods. About 10% did not use any MCM with the fear that it would make it difficult for them to get pregnant.

In Amman, planning a pregnancy (30%) and infrequent sexual activity (18%) were the common reasons for not using a contraceptive method. In Karak, about one-third (33%) were afraid of side effects of MCMs and 17% had husbands or partners who opposed the use of MCMs. Like Amman, 31% of women in Zarqa wanted a new child while 11% were afraid of side effects and health concerns of MCMs and a similar proportion weren't using a family planning method due to opposition from their husbands or partners.

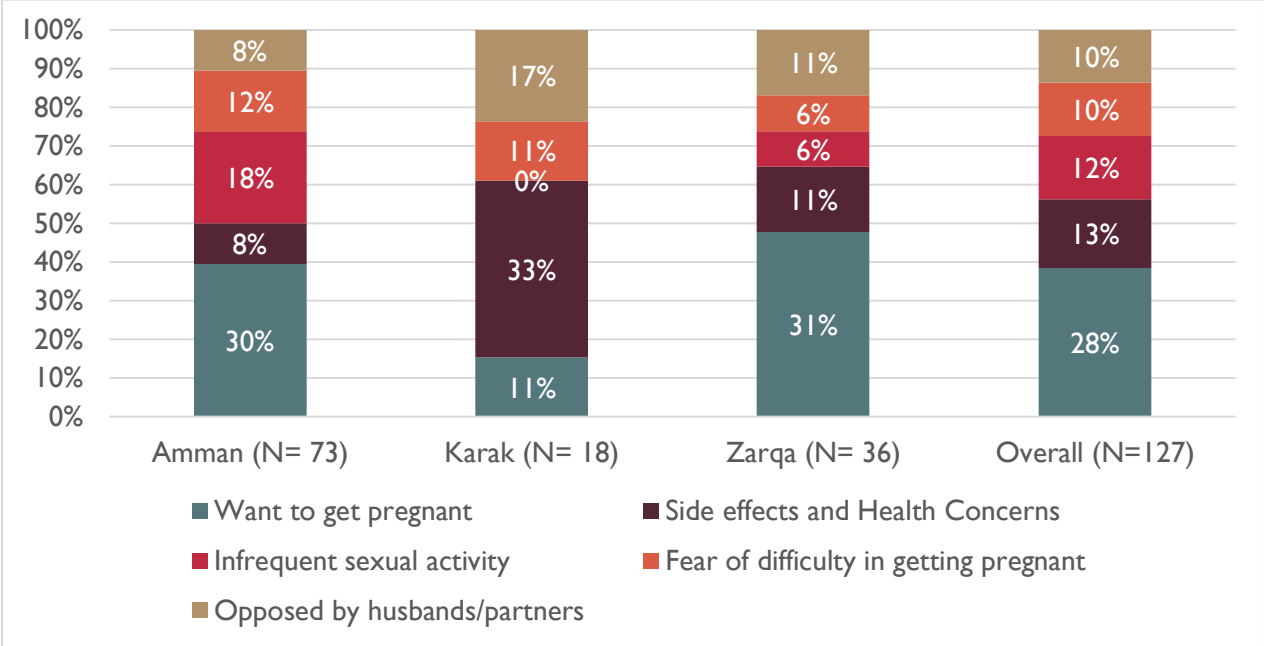


Figure 25. Reasons for not using MCMs / non-pregnant women, by governorate

10.3 Knowledge on Post-Partum Contraceptive Use (MCMs)

As shown in Table 18, women in the sample were asked about the most appropriate time for a woman to start contraception after childbirth. Almost half of the women (48%) responded that contraceptive methods could be used within one month after childbirth, while about 6% responded that contraception could begin immediately post childbirth. On the contrary, about 46% of the women in the sample did not respond to the options or did not know time to start contraception post childbirth.

Table 16. Women’s Knowledge on Post-Partum Contraceptive Use, by Governorate

Maternal Knowledge on Contraceptive Use	Amman (N=526)	Karak (N=267)	Zarqa (N=286)	Total (N=1079)	Chi-square
After giving birth, when should a woman start using contraception?					
Immediately	8%	5%	4%	6%	0.000***
Within one month	45%	65%	37%	48%	
Don't know or did not mention the two responses above	47%	30%	59%	46%	

Chi-square are shown in the table above; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

II. Access to Information During Pregnancy and Lactation

Key Findings

- Less than one-fourth (23%) of women received information on diet and nutrition during pregnancy and lactation. A common source of information were neighbors and friends. The majority of women (89%) started eating a diverse diet after being exposed to the messages.
- About 57% of women had received information on early initiation of breastfeeding, mostly from faith-based groups and medical doctors. Upon receipt of information, 82% made a self-decision to initiate breastfeeding within the first hour of birth.
- About half of the women (54%) received information on exclusive breastfeeding, of which 58% had received information from their neighbor or relative, while 38% received information from doctors.
- About 40% of women had received information on what foods or food groups to feed to children 6-23 months, mostly from friends and neighbors.
- About 77% of women and their households had received information on using MCMs, mostly from their doctors, neighbors, and friends.
- About 37% of women had heard about the “I Protect Them” campaign launched by the Ministry of Health.

In this section, various questions related to knowledge, access to information, practices, and behaviors after receipt of information on diet, appropriate breastfeeding practices, infant and young child feeding practices, and COVID-19 prevention practices were asked to pregnant and lactating women in the sample. All women, pregnant and non-pregnant women, responded to the question (n=1079).

II.1 Access to Information on Diets During Pregnancy & Lactation

Only about 23% of women received information on eating diverse foods during pregnancy and lactation. More women in Amman (26%) had received information, followed by Karak (21%) and Zarqa (18%). The information was received mostly from doctors (44%), neighbors or relatives (43%), followed by social media platforms such as WhatsApp, Facebook, and Twitter (15%). Almost 90% of women started eating diverse foods after receiving the information and continue to include diverse food groups in their diet (**Table 19**).

Table 17. Knowledge and Practices on Diet and Nutrition, by Governorate

Exposure to PLW dietary diversity messaging	Amman	Karak	Zarqa	Overall	Chi-square
	(N=137)	(N=56)	(N=52)	(N=245)	
Received information on eating diverse food groups every day (Yes)	26%	21%	18%	23%	0.028*
Foods recommended:					
Grains & tubers	18%	16%	6%	15%	0.119
Legumes	19%	21%	23%	20%	0.804
Nuts	12%	21%	4%	12%	0.020*
Dairy	59%	61%	27%	53%	0.000***
Meat, poultry, fish	69%	66%	48%	64%	0.023*
Eggs	50%	43%	25%	43%	0.007**
Dark green leafy vegetables	52%	64%	48%	54%	0.185
Vitamin A rich fruits and vegetables	72%	70%	54%	67%	0.063
Source of information:					
Neighbor or relative	42%	57%	33%	43%	0.032*
Doctor	50%	41%	35%	44%	0.151
Social media (Facebook, WhatsApp, etc.)	18%	18%	4%	15%	0.038*
Started eating diverse foods after receiving information (Yes)	88%	98%	87%	89%	0.072
Who decided to make the change?	(N=120)	(N=55)	(N=45)	(N=220)	Chi-square
Self	76%	80%	69%	75%	0.434
Spouse	8%	7%	9%	8%	0.954
Mother	20%	15%	16%	18%	0.621

Chi-square are shown in the table above; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

11.2 Information on Early Initiation of Breastfeeding

As shown in **Table 20**, about 57% of women had received information on early initiation of breastfeeding. A higher proportion of women in Karak (66%), followed by Amman (59%) had received information. Only about 46% of women in Zarqa had received information on early initiation of breastfeeding. The information was received mostly from faith-based outreach groups (51%) and doctors (40%). Seventy one percent of women who received the information started breastfeeding immediately after, or within one hour, of birth of their child. Of the remaining 29% who did not start breastfeeding, 66% did not breastfeed due to the newborn's medical complications, while 26% did not receive their baby right away, since the baby was under observation as per the health facility policy.

Eighty two percent of women reported that it was their self-decision to initiate breastfeeding upon receipt of information. About 13% reported it was their mother-in-law’s decision to breastfeed, while 12% reported that it was a mutual joint decision by the women and her spouse to breastfeed.

Table 18. Exposure to Information on Early Initiation of Breastfeeding, by Governorate

Exposure to messaging on breastfeeding initiation	Amman	Karak	Zarqa	Total	Chi-square
	(N=309)	(N=175)	(N=131)	(N=615)	
Received information on starting breastfeeding immediately after birth (Yes)	59%	66%	46%	57%	0.000***
How long after birth was breastfeeding recommended:					
Immediately	53%	47%	46%	50%	0.105
within 1 hour	37%	43%	37%	39%	
within 1 day	9%	10%	15%	11%	
Source of information:					
Faith-based outreach group	55%	55%	37%	51%	0.001***
Doctor	45%	38%	34%	40%	0.057
Nurse	11%	21%	16%	15%	0.007**
Midwife	6%	15%	11%	10%	0.007**
Started breastfeeding right after, or within one hour, giving birth because of this information (Yes)	73%	73%	63%	71%	0.003**
Who decided to make the change?	(N=226)	(N=127)	(N=82)	(N=435)	Chi-square
Self	88%	77%	74%	82%	0.434
Spouse	3%	4%	2%	3%	0.827
Both self and spouse	8%	17%	16%	12%	0.028*
Mother/mother-in-law	10%	17%	16%	13%	0.091

Chi-square are shown in the table above; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

11.3 Information on Exclusive Breastfeeding

Table 21 shows that 54% of women received information on exclusive breastfeeding, of which 58% has received information from their neighbor or relative, while 38% received information from doctors.

Of those who received information, 57% exclusively breastfed their infants, while 39% did not. Common reasons for not breastfeeding exclusively were mother’s understanding that breastmilk was not enough for

the baby (50%) and their difficulties in breastfeeding (21%). However, more than 93% of women suggested that they planned on exclusively breastfeeding when they have the next child.

Table 19. Exposure to Information on Exclusive Breastfeeding, by Governorate

Exposure to messaging on exclusive breastfeeding	Amman	Karak	Zarqa	Overall	Chi-square
	(N=311)	(N=157)	(N=118)	(N=586)	
Received information on starting breastfeeding immediately after birth (Yes)	59%	59%	41%	54%	0.000***
How long after birth was exclusive breastfeeding recommended?					
6 months	79%	79%	72%	78%	0.430
longer than 6 months	7%	6%	10%	7%	
Source of information:					
Faith-based outreach group	57%	68%	49%	58%	0.008**
Doctor	44%	35%	24%	38%	0.000***
Nurse	5%	16%	10%	9%	0.001***
Midwife	4%	10%	11%	7%	0.003**
	(N=199)	(N=53)	(N=63)	(N=315)	Chi-square
Exclusively breastfed the child for at least 6 months because of this information (yes)	56%	49%	65%	57%	0.044*
Reasons for not exclusively breastfeeding:					
breastmilk alone is not enough for my growing baby	49%	50%	55%	50%	0.883
not enough support for breastfeeding	11%	0%	0%	7%	0.083
was not able to due to work	0%	18%	5%	4%	0.001***
infant formula was easier	4%	9%	5%	5%	0.573
had difficulties breastfeeding	23%	24%	10%	21%	0.42
Who decided to make the change?					
Self	88%	77%	74%	82%	0.434
Spouse	3%	4%	2%	3%	0.827
Both self and spouse	8%	17%	16%	12%	0.028*
Mother/mother-in-law	10%	17%	16%	13%	0.091

Chi-square are shown in the table above; *p<0.05; **p<0.01; ***p<0.001

11.4 Information on Complementary & Young Child Feeding

Table 22 shows that 40% of women had received information on what foods or food groups to feed to children aged 6-23 months. Neighbors and relative (56%), doctors (31%), and social media platforms (19%) were the common sources for information

About 83% had received recommendations to give vitamin-A rich fruits and vegetables while about 44% had received recommendations on giving animal protein (meat, poultry, fish, and eggs). Similarly, about 54% had received recommendations to feed dairy while 33% had received information on feeding grains, roots, and tubers. About two-thirds received information on not feedings high sugar and fatty foods, followed by soda (50%), and tea (23%). About 91% of women who received information gave their young child foods according to the recommendations.

11.5 Information on Modern Contraceptive Methods

Table 23 shows that 77% of women and their households had received information on using MCMs during the 12-month postpartum period. The common source of information were doctors (44%), neighbor or relative (37%), midwives (18%), and nurses (16%). The majority of women (90%) were recommended to start using a MCM within the first 3 months post-partum. While 58% started using MCM one-month post-partum, 33% did not and about 8% had not yet given birth. Common reasons for not using MCMs postpartum were that women did not want to use one (68%) and their husbands did not agree or did not think it was important (12%).

Table 20. Information on Complementary and Young Child Feeding

Exposure to messaging on Young Child Dietary Practices	Amman	Karak	Zarqa	Overall	Chi-square
	(N=229)	(N=104)	(N=99)	(N=432)	
Received information on the type and frequency (minimum number of times each day) of food groups to feed for children 6-23 months (Yes %)	44%	39%	35%	40%	0.164
<i>Foods recommended for 6-23 months:</i>					
Grains & tubers	35%	37%	26%	33%	0.241
Legumes	18%	16%	12%	16%	0.378
Dairy	59%	62%	33%	54%	0.000***
Meat, poultry, fish	55%	30%	32%	44%	0.000***
Eggs	54%	46%	25%	46%	0.000***
Vitamin A rich fruits and vegetables	85%	80%	81%	83%	0.402
<i>Foods not recommended for 6-23 months:</i>					
Juice	19%	22%	11%	18%	0.101
Tea	20%	41%	8%	22%	0.000***
Soda	52%	67%	27%	50%	0.000***
High-fat foods (e.g., French fries, chips, etc.)	66%	66%	57%	64%	0.224
High-sugar foods (e.g., cake, pastries, etc.)	76%	58%	55%	68%	0.000***
<i>Source of information:</i>					
Neighbor or Relative	58%	61%	47%	56%	0.122
Doctor	36%	26%	24%	31%	0.043*
Social Media (WhatsApp, Facebook, Twitter, etc.)	18%	24%	13%	19%	0.135
Nurse	4%	8%	9%	6%	0.210
Midwife	3%	5%	6%	4%	0.427
CBO workers	0%	3%	5%	2%	0.022*
PLW/Caregivers started giving their young child foods according to the recommendations (Yes and already following recommendations)	94%	86%	93%	92%	0.000***
Who decided to make the change?	(N=203)	(N=71)	(N=84)	(N=358)	Chi-square
Self	81%	72%	83%	80%	0.171
Mother/mother-in-law	17%	25%	15%	18%	0.230
Other household members	6%	11%	5%	7%	0.215
Spouse	2%	3%	2%	2%	0.912

Chi-square are shown in the table above; *p<0.05; **p<0.01; ***p<0.001

Table 21. Information on Modern Contraceptive Methods (MCMs), by Governorate

Exposure to messaging on Modern Contraceptive Use	Amman	Karak	Zarqa	Overall	Chi-square
	(N=526)	(N=267)	(N=286)	(N=1079)	
Received information on using the MCM methods immediately after giving birth (Yes)	76%	87%	68%	77%	0.000***
Recommended time to start using MCMs after childbirth:	(N=399)	(N=233)	(N=194)	(N=826)	
Less than 1 month	9%	20%	6%	11%	0.000***
1 month	46%	51%	38%	46%	
2 months	35%	25%	45%	35%	
Source of information:					
Neighbor or Relative	40%	42%	26%	37%	0.001***
Doctor	57%	31%	32%	44%	0.000***
Social Media (WhatsApp, Facebook, Twitter, etc.)	2%	4%	3%	3%	0.16
Nurse	8%	27%	22%	16%	0.000***
Midwife	12%	27%	21%	18%	0.000***
CHC member	1%	1%	5%	2%	0.015*
Who decided to make the change?	(N=225)	(N=144)	(N=112)	(N=481)	
Self	46%	42%	63%	49%	0.002**
Both spouse and self	53%	59%	31%	50%	0.000***
Spouse	7%	9%	9%	8%	0.754
Reasons for NOT using MCMs as recommended within one month of childbirth:	(N=149)	(N=59)	(N=72)	(N=280)	
Did not want to	63%	81%	67%	68%	0.038*
Did not agree with the recommendation/did not think it was important	9%	8%	10%	9%	0.968
Husband/partner did not agree/did not think it was important	9%	12%	17%	12%	0.291

Chi-square are shown in the table above; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

11.6 Information on COVID-19 Prevention

As shown in **Table 24**, women were asked about their knowledge about the campaign launched by the Ministry of Health on COVID-19 prevention. About 37% of women had heard about the “I Protect Them” campaign launched by the Ministry of Health. Across the governorates, 42% of women in Karak, followed by 35% of women in Zarqa and Amman had heard about the campaign. Of those who had heard about the

campaign, more than half of the women had heard about the campaign through television and social media platforms. About 10% of women reported to have received the information from billboards advertisements.

Table 22. Information on COVID-19 Prevention

Exposure to "I Protect Campaign"	Amman	Karak	Zarqa	Overall	Chi-square
	(N=526)	(N=267)	(N=286)	(N=1079)	
Heard of "I Protect Campaign" implemented by the MOH (Yes)	35%	42%	36%	37%	0.200
Where did you hear about the "I Protect Campaign"?	(N=186)	(N=111)	(N=102)	(N=399)	Chi-square
Nurse	51%	68%	54%	56%	0.015*
Midwife	45%	43%	38%	43%	0.570
CBO member	12%	8%	7%	8%	0.253

Chi-square are shown in the table above; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

12. Healthcare Providers Knowledge on IYCF practices

Key Findings

- Overall, the majority of HCPs were aware about the importance of early initiation of breastfeeding and exclusive breastfeeding for the growth and development of the child.
- However, only about 16% of HCPs correctly identified good signs of positioning of the baby for breastfeeding. Only 47% knew about on demand breastfeeding.
- Only about 15% of HCPs at the private health facilities knew about international code of marketing breastmilk substitutes, compared to 43% of HCPs in public facilities.
- More than 90% of HCPs could not identify the minimum number of food groups a child 6-23 months of age should eat each day.

Like PLW, HCPs from the 24 health facilities were interviewed on their knowledge on diet and the appropriate breastfeeding, infant and young child feeding behaviors and practices. A total of 70 HCPs responded. Findings are disaggregated by facility types (public vs private) and the three governorates.

12.1 Breastfeeding Practices

As seen in **Table 25**, all HCPs in the sample were familiar with the definition of being exclusively breastfed, and that the mother should feed the colostrum to her baby. However, about 9 percent (6 HCPs) were not aware that an infant should be exclusively breastfed for at least first 6 months. About 87% (61 HCPs) accurately knew about early initiation of breastfeeding (immediately or within 1 hour of birth).

On the other hand, only about 16% (11 HCPs) correctly identified the two signs of good positioning of baby during breastfeeding, while 9% (6 HCPs) correctly identified the signs of good attachment of the baby to the breast. About 47% (33 HCPs) knew about on demand breastfeeding, that is, whenever the baby shows signs of ready to be fed. Less than 50% of the total doctors, nurses, and midwives in the sample knew about on-demand feeding. The percent distribution was lower for HCPs from public facilities (43%)

When asked about whether a mother can restart breastfeeding once stopped, 77% (54 HCPs) correctly answered that they can, while 21% (comprised of nurses and midwives) answered incorrectly. More than three-fourths of HCPs in the sample responded offering infant formula in the first few hours as a key action that discourages breastfeeding. On the other hand, only a few HCPs from public (8%) and private (18%) facilities correctly identified signs of engorged breasts and/or mastitis.

Table 23. HCP Knowledge on Breastfeeding, by Facility Type and Governorate

Knowledge on Breastfeeding	Facility Type		Governorate		
	Public	Private	Amman	Karak	Zarqa
	(N=37)	(N=33)	(N=37)	(N=17)	(N=16)
Exclusive breastfeeding means only giving breastmilk and no other liquids or foods	100%	97%	100%	94%	100%
Baby should be exclusively breastfed for 6 months	95%	88%	89%	88%	100%
Baby should be breastfed immediately or within 1 hour of birth	86%	88%	81%	94%	94%
Colostrum or first yellowish milk should be given to the baby	97%	100%	97%	100%	100%
Mother should perform on demand feeding (whenever the baby shows sign that he/she is ready to feed)	43%	52%	49%	47%	44%
Once a mother has stopped breastfeeding, she can restart again	76%	79%	84%	65%	75%
International code of marketing breast milk substitutes include:					
Formula and any milk marketed for children up to 3 years	43%	15%	22%	65%	13%
Don't know	32%	33%	27%	29%	50%
Offering infant formula in the first few hours after birth discourages breastfeeding	78%	79%	84%	76%	69%
Mother should continue breastfeeding for 24 months or more	59%	70%	68%	35%	88%
Two signs of good positioning of baby during breastfeeding are:					
Baby's head and body are in straight line	38%	21%	19%	53%	31%
Baby approaches breast, nose to nipple with a wide, gaping mouth	62%	59%	54%	65%	69%
HCP correctly answered both responses	19%	12%	11%	29%	13%
Two signs of good attachment of the baby to the breast are:					
Baby's mouth is wide open	46%	30%	27%	59%	44%
mother feels no pain	16%	36%	24%	18%	36%
HCP correctly answered both responses	3%	15%	3%	12%	19%
Two signs that baby less than 6 months are not getting enough breast milk are:					
Poor weight gain	78%	88%	78%	88%	88%
Baby passes small amount of concentrated urine	16%	9%	14%	18%	6%
HCP correctly answered both responses	5%	9%	8%	12%	0%

If a breastfeeding mother complains of painful, hot, heavy, and hard breast, with shiny skin around the breast, it might be:					
Engorged	32%	36%	35%	35%	31%
Inflamed milk ducts (mastitis)	49%	70%	57%	76%	44%
HCP correctly answered both responses	8%	18%	14%	18%	6%
A breastfeeding mother complaining of not having enough breastmilk can keep up her milk supply by:					
Breastfeeding on demand	38%	30%	24%	53%	36%
manually expressing breastmilk	27%	6%	14%	35%	6%
eating a healthy and diversified diet	86%	88%	86%	76%	100%
drink enough liquids during the day	70%	76%	78%	65%	69%

12.2 Complementary Feeding Practices

Most of the HCPs were familiar with the different concepts of complementary feeding, including the definition of complementary foods, the time to start complementary feeding, and the importance of continued breastfeeding. However, more than 90% of HCPs (both in public and private facilities) and across the three governorates could not identify the minimum number of food groups a child 6-23 months of age should eat each day. In fact, none of the HCPs in Karak answered correctly. Only about 30% (21 HCPs) were aware of feeding thick consistency of complementary foods to an infant or a young child. Fifty six percent of HCPs advised mother/caregivers to encourage and assist the child to eat and not force them as an appropriate way to complementary feeding (Table 26).

Regarding the introduction of complementary food groups, more than 75% of the HCPs suggested introduction of vegetables, fruits, pureed baby foods, grain-based porridge, and infant cereal to a child between 6-8 months of age. More than 75% of HCPs did not recommend beverages such as tea and soda to children 6-23 months, while only about half of the HCPs did not recommend giving sugary foods (cookies, ice cream and candies) to children 6-23 months of age.

Table 24. HCPs Knowledge on Complementary Feeding Practices

Knowledge on Complementary Feeding	Health Facility type		Governorate		
	Public	Private	Amman	Karak	Zarqa
	(N=37)	(N=33)	(N=37)	(N=17)	(N=16)
In addition to breastfeeding, complementary feeding should begin at 6 months	100%	88%	95%	94%	94%
Is there a minimum number of food groups a child 6-23 months should eat each day to have an adequately diverse diet?					
Yes	41%	55%	49%	53%	38%
What is the minimum number of food groups child 6-23 months age should eat each day?					

5 food groups	6%	11%	11%	0%	17%
Which foods or types of foods can be added to porridge to make it more nutritious					
Milk, yogurt, Cheese	59%	79%	66%	71%	69%
Other fruits and vegetables	62%	79%	76%	65%	63%
Orange and yellow fruits and vegetables	43%	39%	30%	65%	44%
Green Leafy vegetables	35%	21%	27%	41%	19%
Fruit juice	43%	42%	35%	65%	38%
flavored or sweetened milk	24%	6%	14%	35%	0%
Following fluids and foods should NOT be given to 6-23 months aged children					
Soda	91%	97%	100%	82%	94%
Tea	70%	82%	89%	47%	75%
Sugary foods	43%	55%	54%	35%	50%
Fried and Fatty foods	41%	42%	41%	29%	56%

12.3 Nutrition of Pregnant & Lactating Women

With respect to the diets and nutrition of pregnant women, more than 75% of HCPs knew that pregnant women should eat more protein-rich and iron-rich foods compared to non-pregnant women (Table 27). Percent distribution was higher in HCPs from private facilities (88%) compared to public facilities (70%). About 77% of HCPs were aware that lactating women should consume more protein-rich foods compared to non-lactating women. The percent distribution was lower in Zarqa (69% and 63%) compared to Amman (81%) and Karak (71% and 82%), respectively.

Table 25. HCPs Knowledge on Nutrition of Pregnant and Lactating Women, by Facility Type and Governorate

Knowledge on nutrition of pregnant and lactating women	Health Facility type		Governorate		
	Public	Private	Amman	Karak	Zarqa
	(N=37)	(N=33)	(N=37)	(N=17)	(N=16)
Pregnant women should eat the following to provide good nutrition for herself and her growing fetus					
Protein rich foods	78%	72%	81%	71%	69%
Iron rich foods	70%	88%	78%	71%	86%
Eat more food in general	27%	39%	27%	47%	31%
Lactating women should eat the following to provide good nutrition for herself and her growing fetus:					
Protein rich foods	76%	79%	81%	82%	63%
Iron rich foods	66%	76%	68%	82%	69%
Eat more food in general	38%	45%	32%	47%	56%
Supplements beneficial during pregnancy					

Iron	97%	91%	92%	94%	100%
Folic acid	86%	94%	89%	94%	88%
Calcium	81%	91%	81%	82%	100%
Vitamin A	16%	24%	16%	29%	19%
Food practices that lead to unwanted weight gain during pregnancy:					
Frequent consumption of sugar sweetened beverages	76%	85%	84%	76%	75%
Medical conditions (e.g., diabetes, hypertension, etc.)	70%	76%	76%	71%	69%
Frequent consumption of fried foods	65%	79%	68%	76%	75%
Limited physical activity	49%	67%	57%	53%	63%
High stress	57%	42%	51%	41%	56%
Limited sleep	54%	48%	54%	47%	50%
Risks for pregnant women who gain too much weight during pregnancy					
Preeclampsia/hypertension during pregnancy	92%	88%	86%	94%	94%
Gestational diabetes	92%	88%	86%	94%	94%
Large for gestation	51%	52%	43%	71%	50%
Preterm delivery	46%	36%	43%	47%	31%
Miscarriage	38%	33%	38%	29%	38%

With respect to multiple-micronutrient supplementation in pregnancy, about 94% of HCPs recommended iron supplementation, followed by folic acid (90%) and calcium supplements (86%). The distribution was consistent across public and private facilities and the three governorates. With respect to food-related practices and risk factors for weight gain in pregnant and lactating women, more than three fourths of HCPs identified consumption of sugar-sweetened beverages and sweets and medical conditions (hypertension and diabetes) as key risk factors. More than 70% identified consumption of fried foods as a risk factor, about half of the HCPs identified limited physical activity, lack of sleep, and increased stress as key risk factors. Similarly, when asked about medical complications in women who gain significant weight during pregnancy, more than 90% of HCPs listed preeclampsia/hypertension during pregnancy and gestational diabetes as common complications. A smaller proportion of HCPs were aware of child-related complications: large for gestation (51%), and preterm delivery, miscarriage (36%).

12.4 Prenatal and Postnatal Care

Table 28 shows that most HCPs (89%) responded that pregnant women should have 8 or more antenatal visits throughout their pregnancy. However, less than one-third knew about folic acid supplementation during the first trimester. Across the facilities, a higher proportion of HCPs from private facilities (39%) knew about folic acid supplementation compared to public facilities (24%). Across the three governorates, only about 12% of HCPs in Karak knew about folic acid supplementation, compared to Amman (41%) and Zarqa (31%). In addition, only about 33% of HCPs in private and 24% in public facilities knew about post-natal iron and folic acid supplementation. While the percent distribution in Zarqa (56%) and Amman (35%) was better,

only about 6% of HCPs knew about the appropriate duration of post-natal supplementation of iron and folic acid.

Table 26. HCP Knowledge on Pregnancy and Post-Natal Services, by Facility Type and Governorate

Knowledge on pregnancy and post-natal care	Health Facility type		Governorate		
	Public	Private	Amman	Karak	Zarqa
	(N=37)	(N=33)	(N=37)	(N=17)	(N=16)
Women should attend 8 or more ANC visits throughout their pregnancy	84%	94%	86%	82%	100%
Pregnant women not previously vaccinated should take 2 shots of tetanus toxoid during their pregnancy	43%	45%	32%	59%	56%
Pregnant women should take iron supplement tables daily during pregnancy	95%	88%	84%	100%	100%
Pregnant women should take Folic acid supplements daily during the first trimester	24%	39%	41%	12%	31%
Post-birth, iron tablet supplements, either alone or in combination with folic acid should be continued until 6-12 weeks post-delivery	24%	33%	35%	6%	56%

12.5 Family Planning and Reproductive Health

Table 28 shows that almost all HCPs knew about MCMs such as IUDs (99%), oral contraceptive pills (97%), followed by male condoms (91%) and implants (91%). Similarly, more than 90% (64 HCPs) were aware of the ideal birth spacing between pregnancies. When asked about the risks of not waiting at least or more than 24 months between pregnancies, HCPs listed maternal anemia and folate deficiencies (80%), followed by risks of premature birth (69%), low birthweight children (59%), and small for gestational age children (48%) (**Table 29**). Similarly, the majority of HCPs (94%) agreed that a woman should wait until they are at least 18 years old before trying to become pregnant (**Table 29**).

However, almost half of the HCPs (46%) responded that natural family planning or traditional contraceptive methods was appropriate for family planning. This included a mix of doctors, nurses, and midwives (**Table 29**).

Table 27. HCP Knowledge on Reproductive Health and Family Planning Methods, By Health Facility Type and Governorate

Knowledge on reproductive health and Family planning methods	Health Facility type		Governorate		
	Public	Private	Amman	Karak	Zarqa
	(N=37)	(N=33)	(N=37)	(N=17)	(N=16)
Which MCM methods have you heard about					
IUDs	97%	100%	97%	100%	100%
Oral contraceptive pills	97%	97%	100%	88%	100%
Male condoms	97%	97%	97%	100%	94%
Implants	95%	88%	86%	100%	94%
Ideal spacing between pregnancies is at least or more than 24 months	92%	91%	86%	100%	94%
Women should wait until after 18 years to become pregnant because there is:					
Lower risk of maternal death	70%	82%	76%	88%	63%
lower risk of preterm delivery	62%	70%	65%	71%	63%
lower risk of child with low birth weight	54%	64%	51%	71%	63%
Common risks of not less than 24 months in between pregnancies are:					
Increased risk of depleted maternal folate stores	71%	90%	88%	65%	80%
increased risk of maternal anemia	76%	83%	81%	88%	67%
Increased risk of premature death	71%	67%	75%	71%	53%
increased risk of low birth weight	53%	67%	63%	47%	67%
increased risk for small for gestational age	47%	50%	50%	41%	53%

13. In-Service Training of HCPs

Key Findings

- Overall, 70% of HCPs had previously received in-service training related to IYCF practices, nutrition, or family planning.
- Around two thirds (65%) of HCPs had received training on breastfeeding, out of which over 85% received training on benefits of exclusive breastfeeding.
- Forty-one percent of HCPs received training on diets and nutrition.
- A small proportion of HCPs had received training on newborn care services. About 33% of HCPs from Zarqa, 25% from Karak and only about 20% from Amman received training on newborn care services.

This section includes findings on the in-service training received by HCPs on IYCF counseling, diet, and newborn care practices. Findings are disaggregated by facility type (public and private) and by governorates (Amman, Karak, and Zarqa).

13.1 Training on IYCF Counseling

In general, 70% of HCPs had previously received in-service training related to IYCF practices, nutrition, or family planning (as shown in **Table 30**). The distribution was consistent across the facility type and the three governorates. The proportion was higher amongst midwives (80%), followed by nurses (71%). Only about 41% percent of doctors had received any IYCF, nutrition, or family planning related trainings since they had start working as a medical professional.

Similarly, 88% of HCPs had received training on counseling, out of which over 90% received training on family planning and reproductive health counseling, followed by counseling on breastfeeding (65%). A higher proportion of nurses and midwives had received training on counseling. More HCPs from public health facilities (96%) had received trainings on counseling compared to private facilities (78%). Almost half of these trainings were conducted by the Ministry of Health across the public health facilities in the three governorates.

Table 28. HCP In-Service Training on IYCF Practices, by Health Facility Type and Governorate

HCP In-Service Training on IYCF practices	Health Facility type		Governorate		
	Public	Private	Amman	Karak	Zarqa
	(N=37)	(N=33)	(N=37)	(N=17)	(N=16)
Received in-service training related to IYCF practices, nutrition, or family planning (Yes)	70%	70%	68%	71%	75%
Received training on counseling (Yes)	96%	78%	84%	100%	83%
Received training on counseling:					
1-2 years ago,	28%	28%	38%	8%	30%
More than 2 years ago	72%	44%	52%	75%	60%
Received training on counseling from:					
Jordan MOH	52%	39%	48%	50%	40%
Development projects	24%	17%	29%	17%	10%
Private health training centers	4%	17%	5%	25%	0%

13.2 Training on Breastfeeding Practices

As shown in **Table 31**, two out of three (65%) HCPs had received training on breastfeeding, out of which over 85% received training on benefits of exclusive breastfeeding, 81% on benefits of continued breastfeeding, 75% on differences between breastmilk and infant formula, followed by 72% on breastfeeding technique and importance of early initiation of breastfeeding (56%). A higher proportion of midwives (85%) followed by nurses (60%) and doctors (40%) had received training on breastfeeding. A higher proportion of HCPs from Karak (83%), followed by Amman (60%) and Zarqa (58%) had received training on breastfeeding. Lastly, a higher proportion of HCPs at the public health facilities (81%) had received training compared to HCPs at private facilities.

Table 29. HCP In-Service Training on Breastfeeding Practices, by Health Facility Type and Governorate

HCP In-Service Training on Breastfeeding practices	Health Facility type		Governorate		
	Public	Private	Amman	Karak	Zarqa
	(N=37)	(N=33)	(N=37)	(N=17)	(N=16)
Received training on Breastfeeding (Yes)	81%	48%	60%	83%	58%
Received training on breastfeeding:					
0-6 months ago,	10%	45%	13%	30%	29%
1-2 years ago,	14%	9%	20%	0%	14%
more than 2 years ago	67%	36%	47%	70%	57%
Received training on breastfeeding from:					
Jordan MOH	67%	18%	40%	50%	71%
Development projects	29%	9%	27%	20%	14%
Private health training centers	0%	36%	13%	20%	0%

13.3 Training on Diets

As shown in **Table 32**, about 41 percent of HCPs received training on diets and nutrition, out of which 80% had received training on diets to support lactation while only about half (10 HCPs) received training on supporting a healthy pregnancy and complementary feeding. The percent distribution was highest amongst HCPs in Karak (50%), followed by Amman (44%) and lowest in Zarqa (25%).

Table 30. HCP In-Service Training on Maternal Diet, by Health Facility Type and Governorate

HCP In-Service Training on Maternal Diet and Nutrition	Health Facility type		Governorate		
	Public	Private	Amman	Karak	Zarqa
	(N=37)	(N=33)	(N=37)	(N=17)	(N=16)
Received training on diets (Yes)	38%	43%	44%	50%	25%
Received training on diets:					
0-6 months ago,	0%	40%	27%	17%	0%
1-2 years ago,	20%	10%	0%	33%	33%
More than 2 years ago	80%	40%	64%	50%	67%
Received training on diets from:					
Jordan MOH	80%	0%	36%	50%	33%
Development projects	10%	20%	18%	0%	33%
Private health training centers	10%	50%	27%	50%	0%

13.4 Training on Newborn Care Services

A small proportion of HCPs had received training on newborn care services. About 33% of HCPs from Zarqa, 25% from Karak, and only about 20% from Amman received training on newborn care services. Across the facilities, the proportion was higher in private facilities (30%), but only in comparison to the HCPs that received training from the public health facilities (**Table 33**).

Table 31. HCP In-Service Training on Newborn Care Services, by Health Facility Type and Governorate

HCP In-Service Training on newborn care services	Health Facility type		Governorate		
	Public	Private	Amman	Karak	Zarqa
	(N=37)	(N=33)	(N=37)	(N=17)	(N=16)
Received training on newborn care services (Yes)	19%	30%	20%	25%	33%
Received training on newborn care services:					
0-6 months ago,	20%	29%	60%	0%	0%
1-2 years ago,	20%	14%	0%	0%	50%
More than 2 years ago	60%	57%	40%	100%	50%
Received training on newborn care services from:					
Jordan MOH	80%	14%	40%	67%	25%
Development projects	20%	29%	40%	0%	25%
Non-profit accredited	0%	29%	20%	0%	25%

14. Conclusion

The Jordan Nutrition Innovation Lab, as part of its prospective cross-sectional evaluation of CHN, conducted the baseline survey (Panel 1) between September-November 2021 across the CHN targeted districts in the three governorates of Jordan (Amman, Karak and Zarqa). The baseline survey captured data and information from pregnant and lactating women and healthcare providers from the 24 health facilities on the prevailing situation and the six CHN program outcomes in the CHN-targeted areas. In addition, additional indicators on maternal, infant, and young child nutrition, reproductive health and family planning methods, antenatal, perinatal, and post-natal care services, training, and knowledge of PLW and HCPs were captured.

The baseline findings from the survey conducted between September-November 2021 presents information on the prevailing situation in the CHN-targeted areas about maternal, infant, and young child nutrition. Future planned assessments will allow us to assess the level of change of these key program outcomes that are indicators of optimal maternal and IYCF practices from early initiation of breastfeeding, exclusive breastfeeding, and continued breastfeeding to appropriate complementary feedings, as well as nutrition of reproductive age group women during pregnancy and lactation in the targeted communities of Jordan.

Our findings reveal significant variability in the key CHN-targeted impact outcomes across the three governorates of Amman, Karak and Zarqa. We find variability in the nutritional status of PLW and infants and young children under 24 months, the knowledge, attitudes, and practices on IYCF and family planning practices of the PLW, the extent of exposure to information on MIYCN, and factors associated with key IYCF (breastfeeding) and family planning practices. Similarly, we found variability in the knowledge, attitudes, and capacity of the HCPs across the three CHN targeted governorates. These results indicate the need to control for such differences when assessing change over time within the context of program impact estimation. This information will allow JNIL to determine the level of change on the key CHN impact outcome indicators between baseline and subsequent evaluations.

Finally, our cross-sectional inferential analysis of specific outcomes highlighted mother's education in most instances, the household's socio-economic status, and geographic location as key factors associated with the odds of better outcomes. Critical concerns must be raised of the findings of nutritional status of non-pregnant lactating women. High rates of overweight and obesity as demonstrated by body mass index and waist to hip ratio not only highlight the risk of complications in future pregnancies (e.g., greater risk of gestational diabetes), but also long-term higher risk of early onset of non-communicable diseases.

Annex A

Table 32. Factors Associated with the Odds of Early Initiation of Breastfeeding in all Infants Under 24 Months of Age

	Early Initiation of Breastfeeding	
	Odds ratio (Std error)	95% Confidence Interval
Received information on early initiation	1.80 (0.38) ***	1.19 – 2.74
Started breastfeeding on receiving information	7.48 (2.25) ***	4.16 – 13.48
Mother age category (Ref:18-25 years)		
25-35 years	0.84 (0.23)	0.49 – 1.44
35-49 years	0.43 (0.17) *	0.20 – 0.95
Mother's education (ref: no education)		
Grade 1-11	1.54 (0.86)	0.52 – 4.59
Completed secondary	1.11 (0.66)	3.46 – 3.55
Completed higher education	0.55 (0.35)	0.16 – 1.93
Wealth Quintile (ref: poorest)		
Second	0.45 (0.15) *	0.23 – 0.86
Middle	0.70 (0.23)	0.37 – 1.34
Fourth	1.07 (0.34)	0.57 – 2.01
Highest	1.39 (0.50)	0.69 – 2.83
Districts Ref: Al-Aghwar Al-Janoobieh /Ghour Al-Safi)		
Al Quaismeh	1.12 (0.54)	0.43 – 2.89
Al-Qasabah in Amman	0.69 (0.37)	0.24 – 1.97
Al-Qasr /Rabbah	1.13 (0.66)	0.36 – 3.57
Al-Qasabah in Karak	0.39 (0.25)	0.11 – 1.38
Al-Hashemiyah	0.69 (0.37)	0.16 – 1.30
Al-Qasabah in Zarqa	0.45 (0.24)	0.16 – 1.27
Birth order (ref: First child)		
Second child	0.97 (0.30)	0.52 – 1.79
Third child	1.02 (0.34)	0.53 – 1.98
Fourth child	1.47(0.57)	0.69 – 3.13
Fifth child	1.18 (0.51)	0.50 – 2.77
Sixth child	1.40 (0.79)	0.46 – 4.21
Seventh child	2.84 (2.28)	0.59 – 13.72
More than 7 children	14.65 (13.45) ***	2.42 – 88.63
<i>n</i>		524
Adjusted <i>R</i> ²		0.1708

P*<0.05, *P*<0.01, ****P*<0.001

Table 33. Factors Associated with the Odds of Exclusive Breastfeeding Infants Under the Age of 6 Months

	Exclusive Breastfeeding under 6 months	
	Odds ratio (Std error)	95% Confidence Interval
Received information on exclusive breastfeeding	3.06(1.60) ***	1.10-8.52
Mother age category (Ref:18-25 years)		
25-35 years	0.24 (0.18)	.054 -1.06
35-49 years	0.22 (0.24)	0.27– 1.88
Mother's education (ref: no education)		
Grade 1-11	0.66 (0.42)	0.20-2.27
Completed secondary	2.44 (1.77)	.58-10.18
Wealth Quintile (ref: poorest)		
Second	0.36 (0.28)	0.08–1.65
Middle	0.10 (0.08) ***	0.017-0.53
Fourth	0.72 (0.55)	0.16–3.20
Highest	0.39 (0.31)	0.08–1.82
Districts (Ref: Al-Aghwar Al-Janoobieh /Ghour Al-Safi)		
Al Quaismeh	4.91 (0.649)	0.37 – 65.55
Al-Qasabah in Amman	57.45 (90.1) *	2.66-1242.14
Al-Qasr /Rabbah	2.92 (4.65)	.13-66.24
Al-Qasabah in Karak	2.09 (3.77)	0.06 – 71.89
Al-Hashemiyah	39.03(59.34) *	1.98 – 768.61
Al-Qasabah in Zarqa	26.67(3.77) *	1.44-493.80
Birth order (ref: First child)		
Second child	1.93 (1.27)	0.52 – 7.04
Third child	3.48 (2.81)	0.72-16.95
Fourth child	7.48 (6.76) *	1.27-43.99
Fifth child	17.37 (21.80) *	1.49-203.20
Sixth child	9.83 (12.09)	0.88-109.50
Caesarean		
Yes	.98 (0.49)	0.37-2.61
Child age	0.77 (0.11)	0.58-1.02
<i>n</i>		146
Adjusted <i>R</i> ²		0.2969

P*<0.05, *P*<0.01, ****P*<0.001

Table 34. Factors Associated with MDD-W in Pregnant Women

	Met MDD-W in Pregnant Women	
	Odds ratio (Std error)	95% Confidence Interval
Received information on healthy diet during pregnancy	1.57* (0.32)	1.04-2.36
Mother age	1.00 (0.15)	0.98-1.04
Wealth Quintile (ref: poorest)		
Second	2.06(0.59) *	1.17-3.60
Middle	3.89(1.14) ***	2.19-6.91
Fourth	3.15 (0.91) ***	1.79-5.57
Highest	5.03 (1.50) ***	2.81-9.02
Districts		
Ref: Al-Aghwar Al-Janoobieh /Ghour Al-Safi)		
Al Quaismeh	0.57(0.26)	.23-1.40
Al-Qasabah in Amman	0.50 (0.24)	0.20-1.28
Al-Qasr /Rabbah	.55 (0.35)	.16-1.91
Al-Qasabah in Karak	0.80 (0.37)	0.32–1.96
Al-Hashemiyah	0.38 (0.20)	.13-1.09
Al-Qasabah in Zarqa	0.68 (0.32)	.27-1.72
<i>n</i>		580
Adjusted <i>R</i> ²		0.077

P*<0.05, *P*<0.01, ****P*<0.001

Table 35. Factors Associated with MDD-W in Non-Pregnant/Lactating Women

	Met MDD-W in Non-Pregnant	
	Odds ratio (Std error)	95% Confidence Interval
Received information on healthy diet during pregnancy	1.80 (0.46) *	1.09-2.96
Mother's age	0.99 (0.015)	0.96-1.02
Wealth Quintile (ref: poorest)		
Second	1.11 (0.34)	.61-2.01
Middle	1.74 (0.50)	.99-3.04
Fourth	2.49 (0.71) **	1.42-4.36
Highest	4.68 (1.44) ***	2.56-8.57
Districts Ref: Al-Aghwar Al-Janoobieh /Ghour Al-Safi)		
Al Quaismeh	0.23 (0.12) **	.08-.64
Al-Qasabah in Amman	0.26 (0.14) *	0.09-.77
Al-Qasr /Rabbah	0.25 (0.15) *	0.08-0.64
Al-Qasabah in Karak	0.19 (0.13) *	0.05-0.75
Al-Hashemiyah	0.25 (0.14) *	0.09-.77
Al-Qasabah in Zarqa	0.25 (0.12) *	.08-.76
<i>n</i>		499
Adjusted <i>R</i> ²		0.0686

P*<0.05, *P*<0.01, ****P*<0.001

References

1. Children ever breastfed (%). Accessed May 15, 2022. <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/338>
2. Population J, Survey FH. *THE HASHEMITE KINGDOM OF JORDAN*; 2017.
3. Al Jawaldeh A, Sayed G. Implementation of the International Code of Marketing of Breastmilk Substitutes in the Eastern Mediterranean Region. *Eastern Mediterranean Health Journal*. 2018;24:25-32. doi:10.26719/2018.24.1.25
4. Al-Jawaldeh A, Abul-Fadl A. Assessment of the Baby Friendly Hospital Initiative Implementation in the Eastern Mediterranean Region. *Children*. 2018;5(3):41. doi:10.3390/children5030041
5. Khader YS, Alyahya M, Al-Sheyab N, Shattnawi K, Saqer HR, Batiha A. Evaluation of maternal and newborn health services in Jordan. *Journal of Multidisciplinary Healthcare*. 2018;Volume 11:439-456. doi:10.2147/JMDH.S171982
6. Nazer LH, Tuffaha H. Health care and pharmacy practice in Jordan. *Canadian Journal of Hospital Pharmacy*. 2017;70(2):150-155. doi:10.4212/cjhp.v70i2.1649
7. Ajlouni M. *Jordan Health System Profile, 2010*; 2011. doi:10.13140/RG.2.1.5182.3125
8. *The Hashemite Kingdom of Jordan The Higher Health Council The National Strategy for Health Sector in Jordan*; 2015.
9. Nankumbi J, Muliira JK. Barriers to infant and child-feeding practices: A qualitative study of primary caregivers in rural Uganda. *Journal of Health, Population and Nutrition*. 2015;33(1):106-116. doi:10.3329/jhpn.v33i1.3200
10. Khasawneh W, Khasawneh AA. Predictors and barriers to breastfeeding in North of Jordan: Could we do better? *International Breastfeeding Journal*. 2017;12(1):1-7. doi:10.1186/s13006-017-0140-y
11. Altamimi E, Al Nsour R, Al Dalaen D, Almajali N. Knowledge, Attitude, and Practice of Breastfeeding among Working Mothers in South Jordan. *Workplace Health and Safety*. 2017;65(5):210-218. doi:10.1177/2165079916665395
12. Population J, Survey FH. *THE HASHEMITE KINGDOM OF JORDAN*; 2013.
13. Khassawneh M, Khader Y, Amarin Z, Alkafajei A. Knowledge, attitude and practice of breastfeeding in the north of Jordan: A cross-sectional study. *International Breastfeeding Journal*. 2006;1(1):17. doi:10.1186/1746-4358-1-17
14. Oweis A, Tayem A, Froelicher ES. Breastfeeding practices among Jordanian women. *International Journal of Nursing Practice*. 2009;15(1):32-40. doi:10.1111/j.1440-172X.2008.01720.x
15. Gies I, AlSaleem B, Olang B, et al. Early childhood obesity: a survey of knowledge and practices of physicians from the Middle East and North Africa. *BMC Pediatrics*. 2017;17(1):115. doi:10.1186/s12887-017-0865-1
16. Population J, Survey FH. *THE HASHEMITE KINGDOM OF JORDAN*; 2017.
17. Tatyana. *Nutrition in Jordan Update and Plan of Action A Collaborative Project with the Ministry of Health and WHO*.
18. Dabbour IR. Study of factors affecting exclusive breast feeding and early introduction of complementary food to infants in the Aqaba region of Jordan. *Current Research in Nutrition and Food Science*. 2019;7(3):862-875. doi:10.12944/CRNFSJ.7.3.25
19. Obeidat M, Salameh G, Sn^ AT, Mutair R, Md^^ YG. Feeding Practices in the North of Jordan. *JOURNAL OF THE ROYAL MEDICAL SERVICES*. 2014;21(1):11-16. doi:10.12816/0002572
20. Indicators for assessing infant and young child feeding practices Part 1 Definitions.

21. Indicators for assessing infant and young child feeding practices Part 2 MeasureMent.
22. Minimum Dietary Diversity for Women (MDD-W) | Food and Nutrition Technical Assistance III Project (FANTA). Accessed July 20, 2022. <https://www.fantaproject.org/monitoring-and-evaluation/minimum-dietary-diversity-women-indicator-mddw>
23. Population J, Survey FH. THE HASHEMITE KINGDOM OF JORDAN. Published online 2017. Accessed July 20, 2022. www.DHSprogram.com.
24. WHO | Early initiation of breastfeeding to promote exclusive breastfeeding. WHO. Published online 2019. Accessed August 10, 2021. http://www.who.int/elena/titles/early_breastfeeding/en/
25. Population J, Survey FH. THE HASHEMITE KINGDOM OF JORDAN. Published online 2017. Accessed June 28, 2022. www.DHSprogram.com.
26. Infant and young child feeding. Accessed June 29, 2022. <https://www.who.int/data/nutrition/nlis/info/infant-and-young-child-feeding>
27. Jones AD, Ickes SB, Smith LE, et al. World Health Organization infant and young child feeding indicators and their associations with child anthropometry: A synthesis of recent findings. *Maternal and Child Nutrition*. 2014;10(1):1-17. doi:10.1111/MCN.12070/FULL
28. Minimum Dietary Diversity for Women (MDD-W) | INDDEx Project. Accessed May 17, 2022. <https://inddex.nutrition.tufts.edu/data4diets/indicator/minimum-dietary-diversity-women-mdd-w>
29. WHO Child Growth Standards and the Identification of Severe Acute Malnutrition in Infants and Children. www.who.int/childgrowth/standards
30. The DHS Program - Demographic and Health Survey (DHS). Accessed September 11, 2021. <https://dhsprogram.com/Methodology/Survey-Types/DHS.cfm>
31. Obesity prevalence in non-pregnant women aged 15–49 years, BMI \geq 30 (%) (Health Equity Monitor). Accessed June 28, 2022. <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/3319>
32. Defining Adult Overweight & Obesity | Overweight & Obesity | CDC. Accessed May 17, 2022. <https://www.cdc.gov/obesity/basics/adult-defining.html>
33. Mthombeni S, Coopoo Y, Noorbhai H. Physical Health Status of Emergency Care Providers in South Africa. *Asian Journal of Sports Medicine* 2020 11:2. 2020;11(2):1-8. doi:10.5812/ASJSM.100261