

Geo-Analysis of Demographic Variables Affecting Females Working in Thi-Qar's State Health Sector

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Abstract

Demographic variables are essential to population studies as they are necessary to study population-related changes during a given period by uncovering births and deaths in a society. A given population generally grows following births and deaths. Births are key to the movement and development of that population, an upward-moving trend at present. This study is significant in that draws on facts on workers' births, fetal and infant mortalities, as well as the tempo-spatial variation of births and mortalities across Iraq's Thi-Qar. To this end, certain statistical methods have been adopted to investigate these variations. The study reported a noticeable marital fertility in the area under study by about 453.6 births per 1,000 married female health workers, while fetal mortalities for married female health workers amounted to (345.6) per 1,000 married female health workers in Thi-Qar. The study finds that net mortalities amounted to (219.04) deaths per 1,000 live births of married female health workers in Thi-Qar.

Keywords: Geo-Analysis, Demographic Variables, Sectorial Analysis, Health Sector, Female Workers.

INTRODUCTION

Despite the great role women play at home, their potential is not limited to this. Women are half of society and have a role as workforces commensurate with their potential. The repercussions of today's conditions have made women more determined to contribute to work despite their limited opportunities, reflected in human development indicators. Women's work in the health sector is influenced by a range of demographic variables, with the latter in turn divided into births and deaths. Births are one of the key factors in population change and they are the main influencers in increasing the population's overall size. Population growth often outweighs mortality and migration, as its relevance and study is reflected in future plans for human development programmes. Mortality outweighs migration because fertility precedes it, as competition with births is reflected in the fact that it is more stable and manageable. The impact of the deaths does not only appear to be the changing size of the population, but also the distribution and composition of the population, especially the age structure. Mortality is always related to age level and so death control receives more acceptance than fertility control (1).

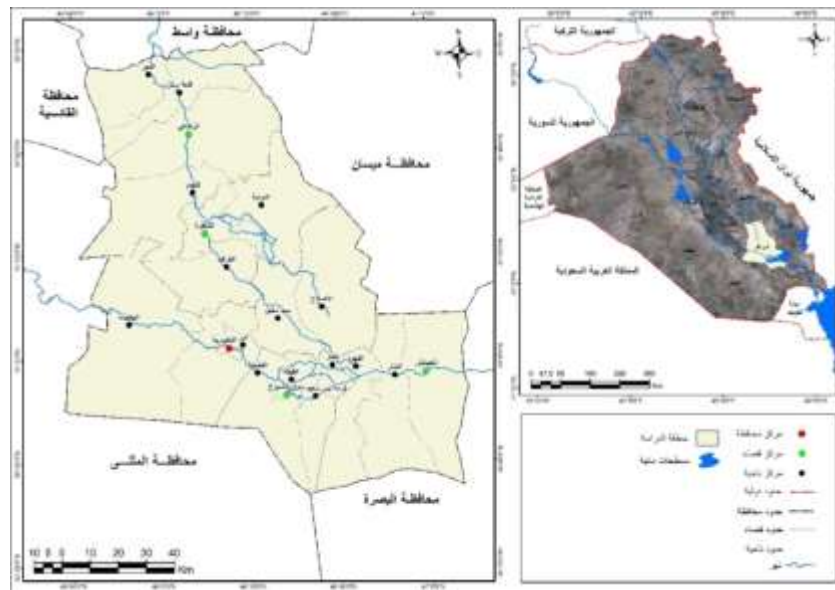
Births and mortalities not only affect population's size, but they also affect settlement, density, age, and occupations. This study, therefore, attempts to answer this research question: Are demographic variables among the factors affecting female employment in state health sector? Additionally, this study hypothesizes that births, fetal mortality, and infant mortality are demographic variables affecting female employment in Thi-Qar's state health sector. The study is significant as it highlights the most important demographic variables and to see how they affect the health services provided by female workers in state health sector. Working women are one of the main pillars of providing services to the population in Thi-Qar. Data are based on samples from Thi-Qar, a southern Iraqi governorate. Bordered by Wasit in the north, Maysan in the east, Qadissiya and Muthana in the west, and Basra and Muthana in the south, Thi-Qar is situated at (32-30,33) latitudes and (42.12-45.37) longitudes, as shown in Map (1). The time limits are 2022.

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Births

Fertility is a key element of demographic studies having been directly linked to increased populations (2). Furthermore, fertility helps uncover demographic variables in societies by reflecting changes in marriage patterns, lifestyle, and social values (3). Social and traditional norms have long linked fertility to women rather than men as women are the recipients of pregnancy, the carrier of the fetuses, and their reproductive abilities are limited by both puberty and menopause(4). There are several demographic consequences of female employment in health sectors, including delaying childbearing age (due to late marriages caused by long educations), less births (due to long working hours), and being concerned about having more children in need of care and spending long time for care. Thus, the real number of live births and the marital reproductive rates will be elaborated on drawing on the data obtained through the processing of field surveys detailed below.



Map 1. Thi-Qar.

Districts (Source: Ministry of Water Resources, State Organization of Surveying, Department of Map-Making, Digitization, Administrative Thi-Qar. Scale: 1/2500,000, Baghdad, Iraq, 2022).

Live Births Born to Health Female Workers in State Sectors

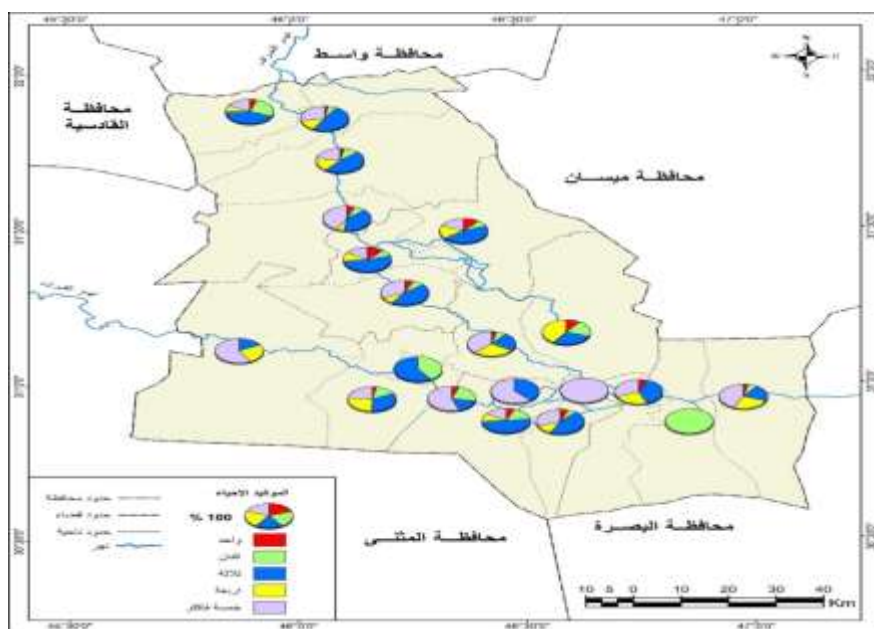
As Table (2) and Map (1) show, there are discrepant numbers of live births which are delivered by married, divorced, as well as widowed women. Three-child females topped all the other child-bearing females (37.8%). As for five-child females made, they made (24,6%). In the last three levels, there have been (19.9, 12.9, and 4.8) for four-child, two-child, and single-child females, respectively.

Apparently, the number of live births of female health workers is not commensurate with the actual fertility of childbearing females, as children's care overlaps with work. Also, there is a remarkable contradiction between mothering and work during childbearing, during which women can contribute greatly to work. Therefore, female workers have less children than other females (5). A quick look at the urban neighborhoods of Thi-Qar shows variant frequencies of childbearing females. Shatrah topped all the other districts with one-child females (12.6%). As for Ur, Batha', Manar, Akikah, and Tarr, they have the lowest percentage of childbearing females in about (0.00%) each. Two-child females have been highest in Manar (100%). The lowest frequencies have been found in Batha', Fuhood, Akikah, and Tarr about (0.00%) each. Three-child females have been highest in Ur (60%) and lowest in both Manar and Tarr (0.00%) each. Four-child females have been highest in Syed

Dakheel (29.6%), yet lowest in Ur, Manar, Akikah, Fadhliah, and Tarr (0.00%) each. Females with five or more children have been highest in Tarr (100%) and lowest in Ur, Islah, and Manar (0,00%) each. Cultural awareness, social norms, and educational qualifications usually decrease or increase females' childbearing. Additionally, social, economic, and psychological surroundings affect the number of births, for instance, urban women, unlike rural women, often use birth controls and follow family planning.

Table 1. Frequencies and percentages of live births born to married females across Thi-Qar in 2022.

District	1	%	2	%	3	%	4	%	5+	%	Total
Central Nasseriya	42	3.3	186	14.8	402	32.1	324	25.8	300	23.9	1254
Ur	0	0	2	40	3	60	0	0	0	0	5
Batha'	0	0	0	0	3	17.6	4	23.5	10	58.8	17
Syed Dakheel	1	3.7	2	7.4	6	22.2	8	29.6	10	37	27
Islah	1	10	2	20	3	30	4	40	0	0	10
Central Refayee	6	3	22	11.1	93	47	32	16.2	45	22.7	198
Fajr	3	5.5	14	25.5	24	43.6	4	7.3	10	18.2	55
Qalat Sekar	2	2.2	6	6.7	45	50	12	13.3	25	27.8	90
Nasr	4	5.6	6	8.5	27	38	4	5.6	30	42.3	71
Central Shatra	34	12.6	22	8.1	141	52.2	28	10.4	45	16.7	270
Duwayyah	3	11.5	2	7.7	12	46.2	4	15.4	5	19.2	26
Gharraf	3	6.4	4	8.5	21	44.7	4	8.5	15	31.9	47
Central Chibaish	2	3.4	4	6.8	21	20.3	16	27.1	25	42.4	59
Manar	0	100	2	8.5	0	44.7	0	8.5	0	31.9	2
Fuhood	1	6.4	0	0	6	44.7	4	25	5	31.3	16
Central Souk Al-Shuyookh	8	6.4	20	16.2	63	51.2	12	9.8	20	16.3	123
Akikah	0	6.4	0	37.5	3	0	0	8.5	5	31.9	8
Karma Beni Saeed	2	6.1	2	6.1	15	45.5	4	12.1	10	30.3	33
Fadhliya	1	5.6	4	22.1	3	16.7	0	0	10	55.6	18
Tarr	0	0	0	0	0	0	0	0	5	100	5
Governorate	113	4.8	300	12.9	882	37.8	464	19.9	575	24.6	2334



Map 2. District-wise distribution of live births born to married females across Thi-Qar in 2022.

To understand why live births decreased in the areas under study, female respondents have been asked: Do you use contraceptives? As indicated in Table (2) and Figure (1), (316) (out of 491) female health workers surveyed in this study answered the above question with (Yes). Furthermore, the results of field survey showed that undesirability in childbirth has highest percentage (43.4%), while the husband's unwillingness to bear

children and living conditions (38.6%) and (18%) respectively. There is also a spatial variation in contraceptives across urban areas. Ur, Islah, and Akikah have thus made highest frequencies in (Unwillingness to bear children) with (100%) each, while Manar, Fuhood, and Tar have made lowest frequencies with (0.00%) each. The (husband's unwillingness to bear children) cause has been highest in Fuhood (100%), yet lowest in Ur, Batha', Syed Dakheel, Islah, Manar, Akikah, and Tar with (100) each. Living conditions preventing childbearing have been highest in Batha', Syed Dakheel, and Karma Beni Saeed (50%), and lowest in Ur, Islah, Manar, Fuhood, Akikah, Fadhliyah, and Tarr with (0.00%) each.

Table 2. Frequencies and percentages of contraceptive use across Thi-Qar in 2022.

District	Do you use contraceptives		Why contraceptives are used						Total
	Yes	No	Unwilling to bear children	%	Husband's unwilling to bear children	%	Living conditions	%	
Central Nasseriya	127	86	45	35.4	65	51.2	17	13.4	127
Ur	1	0	1	100	0	0	0	0	1
Batha'	2	1	1	50	0	0	1	50	2
Syed Dakheel	2	4	1	50	0	0	1	50	2
Islah	1	3	100	0	0	0	0	0	1
Central Refayee	34	17	7	20.6	18	52.9	9	26.5	34
Fajr	9	9	2	22.2	4	44.4	3	33.3	9
Qalat Sekar	14	6	9	64.3	3	21.4	2	14.3	14
Nasr	11	4	6	54.5	3	27.3	2	18.2	11
Central Shatra	65	14	34	52.3	17	26.2	14	21.5	65
Duwayah	7	2	4	54.1	2	28.6	1	14.3	7
Gharraf	6	7	3	50	2	33.3	1	16.7	6
Central Chibaish	3	11	1	33.3	1	33.3	1	33.3	3
Manar	0	1	0	0	0	0	0	0	0
Fuhood	1	2	0	0	1	100	0	0	1
Central Souk Al-Shuyookh	24	7	18	75	4	16.7	2	8.3	24
Akikah	1	1	1	100	0	0	0	0	1
Karma Beni Saeed	6	4	2	33.3	1	16.7	3	50	6
Fadhliya	2	1	1	50	1	50	0	0	2
Tarr	0	1	0	0	0	0	0	0	0
Governorate	316	175	137	43.4%	122	38.6%	57	18%	316

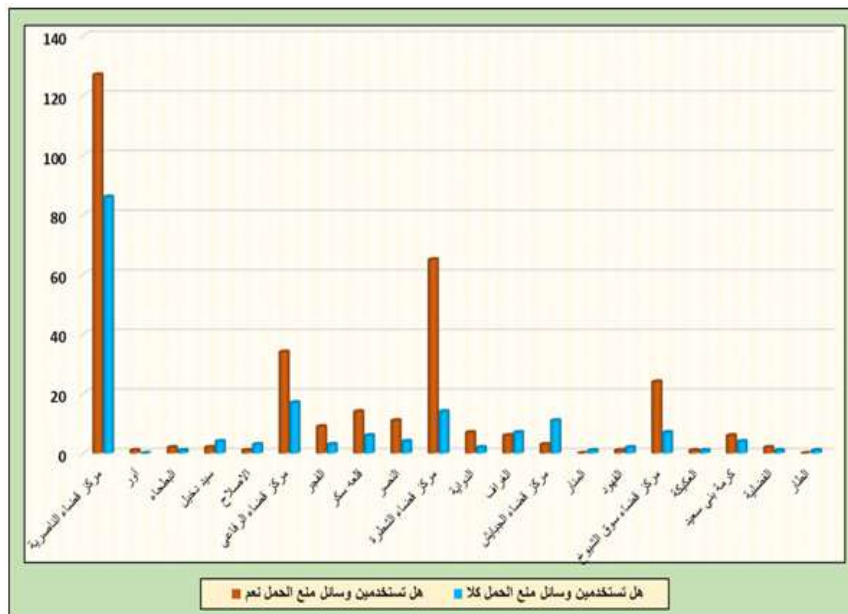


Figure 1. Frequencies of contraceptives used by female workers in Thi-Qar in 2022.

Rates of Marital Fertility

Being an essential foundation in ethnographic studies, fertility is the complex process of vitalization and continuation of human communities. As births are the underlying factor in the future growth of population and workforce, fertility is a demographic variable affecting females' contribution to economic activities. In this sense, fertility is the maximum reproduction that can theoretically be achieved in actual numbers (6). In other words, the number of children born by a female. Marital fertility stands for the number of live births in a given year to the number of married females in the middle of that year multiplied by 1.000 (7). This is more accurate and better means than net births because it only counts births to married women given that fellow, same-age females are single. A factor closely related with fertility rates is women's outdoor jobs. Additionally, the higher a woman's education, the less she will desire to have more children. Remarkably, fertility rates in the areas surveyed in this study amounted to (453.6) births per thousand married female health workers.

As for the suburban areas of Thi-Qar, Table (2) below shows a spatial variation of marital fertility in these areas as indicated in the four-level categorization.

Level One (+0.50 and more)

This level has been identified in five districts. Both Manar and Tarr had a fertility rate of 1000 births per thousand married females. Karma Beni Saeed had a fertility rate of 800 births per thousand married females. Both Syed Dakheel and Duwayah had a fertility rate in 666.7 births per thousand married females. Under-education in rural areas, women's low social status, difficult-to-get birth controls, and rurally-imposed norms of childbearing, and others have jointly boosted higher fertilities in rural areas.

Table 3. Frequency and distribution of marital fertility in married female workers across Thi-Qar in 2022 based on standard means.

District	Live births in 2022	Mid-year married females	Marital fertility	Standard mean
Central Nasseriya	89	201	442.8	0,22-
Ur	0	1	0.00	2,03-
Batha'	1	3	333.3	0,66-
Syed Dakheel	4	6	666.7	0,70
Islah	1	4	250.0	1,01-
Central Refayee	17	49	346.9	0,61-
Fajr	5	12	416.7	0,32-
Qalat Sekar	12	20	600.0	0,43
Nasr	9	15	600.0	0,43
Central Shatra	31	68	455.9	0,16-
Duwayah	6	9	666.7	0,70
Gharraf	5	13	384.6	0,45-
Central Chibaish	5	14	357.1	0,57-
Manar	1	1	1000.0	2,06
Fuhood	1	3	333.3	0,66-
Central Souk Al-Shuyookh	12	28	428.6	0,27-
Akikah	1	2	500.0	0,02
Karma Beni Saeed	8	10	800.0	1,24
Fadhliya	1	3	333.3	0,66-
Tarr	1	1	1000.0	2,06
Governorate	210	463	463.6	
Mean		495.79		
Standard Deviation		244.467		

Level Two (+0.49_0.00)

This level has been identified in three districts. These are Qalat Sekar, Nasr, and Akikah, which had approximately 600, 600, and 500 births per thousand married females respectively.

Level Three (-0.01_0.049)

This level has been identified in five districts. Shatra, Nasseriya, Souk Al-Shuyookh, Fajr, and Gharraf, which had (455.9_384.6) births per thousand married females.

Level Four (-0.50_less)

This level has been identified in seven districts. Urban Chabaish, urban Rifayee, Batha', Fuhood, Fadhliyah, Islah, and Ur, which had fertility rate in (357,1_0,00) per thousand married females. Urban districts identified in level three and level four are mostly downtowns and urban neighborhoods. Urban women, unlike rural women, often use birth controls and follow family planning. Additionally, higher qualifications and cultural awareness delay marriages, which in turn decrease births and fertility rates. Higher incomes and average living conditions contribute to lower fertility in urban areas.

Mortalities

Death is the ultimate fate of all human beings living on earth. Death, therefore, affects populations regardless of causes or ages (8). Accordingly, fetal mortality and infant mortality will be elaborated on.

Fetal Mortality Rates

Fetal mortality is significant as it mirrors health in general, and mothers and infants in particular. This is best reflected in pregnant care, pre-birth care, and infant care. Fetal fertility is also an indicator of quality medical care, mortality rates, and sociocultural development (9). Fetal mortalities thus highly matter not only because they add to the total number of deaths, but they also imply other factors. Fetal mortalities indicate the average medical settings common in a society. Accordingly, low fetal mortalities mean high quality services and high living conditions (10).

Fetal mortality rates are the perinatal deaths per 1,000 of the total female births married in mid-year. Often reported on annual basis, fetal mortality rates are evident of how quality medical care delivered can be assessed. Fetal mortality rate in female health workers (345.6) deaths per 1,000 female health workers from married women across Thi-Qar. Table (3) and Figure (2) below demonstrate a spatial discrepancy in fetal mortality rates across all Thi-Qar districts which have been distributed in three-level categorization.

Level One (+0.50 and more)

This level has been identified in six districts. Ur and Manar had a fetal mortality rate of 2000 deaths per 1,000 married female workers. Nasr, Akikah, and Tarr had 2000 deaths per 1,000 married female workers. Higher fetal mortalities are due to low health services provided to pregnant women, work pressures, and family duties.

Level Two (+0.49_0.00)

No single urban or rural district has been identified at this level.

Level Three (-0.01_-0.49)

This level has been identified in four districts. Syed Dakheel, Duwayah, Karma Beni Saeed, and Qalat Sekar which had a rate of between (550_666,7) deaths per thousand married female workers.

Level Four (-0.50_less)

This level has been identified in ten districts. Fajr, central Rifayee, central Shatra, central Chibaish, central Souk Al-Shuyookh, Gharraf, Fuhood, Batha', Islah, and central Nasseriya had 416.7 to 159.2 deaths per thousand married female workers. Low fetal mortalities are due to the provision of health services, with health institutions and specialist clinics are often situated in urban areas, prevalent medical awareness, and less-burdened urban women, unlike rural women. Taken together, these factors decrease fetal mortalities in urban neighborhoods.

Table 3. Frequency and percentage of fetal mortalities in female health workers across Thi-Qar in 2022 based on standard mean.

District	Round-year fetal mortalities	Mid-year married females	Fetal mortalities	Standard mean
Central Nasseriya	32	201	159.2	1,02-
Ur	2	1	2000	2,51
Batha'	1	3	333.3	0,68-
Syed Dakheel	4	6	666.7	0,04-
Islah	1	4	250	0,84-
Central Refayee	20	49	408.2	0,54-
Fajr	5	12	416.7	0,52-
Qalat Sekar	11	20	550	0,27-
Nasr	15	15	1000	0,59
Central Shatra	27	68	397.1	0,56-
Duwayah	6	9	666.7	0,04-
Gharraf	4	13	307.7	0,73-
Central Chibaish	5	14	357.1	0,64-
Manar	2	1	2000	2,51
Fuhood	1	3	333.3	0,68-
Central Souk Al-Shuyookh	10	28	357.1	0,64-
Akikah	2	2	1000	0,59
Karma Beni Saeed	6	10	600	0,17-
Fadhliya	3	3	1000	0,59
Tarr	1	1	1000	0,59
Governorate	160	463	345.6	
Mean		690.155		
Standard Deviation		522.287		

Infant Mortality Rates

Infant mortality is a demographic indicator used to count the number of children dying in early infancy (less than one year) compared to the number of infants born in the same period and in the same society. Often expressed at rates, this indicator is based on the number of deaths per 1,000 infants born (11). This indicator, therefore, is used to assess the health and safety of breastfeeding children, to check how effective is the health care provided for infants, and to investigate the socioeconomic development of a given population (12). The survey analysis conducted in this study finds that infant mortality rates are (219.04) deaths per thousand live births of married health female workers across Thi-Qar governorate. Additionally, Table (4) and Map (3) show a geo-variation across urban districts regarding infant mortality rates after these rates have been distributed in four-level standardized norms.

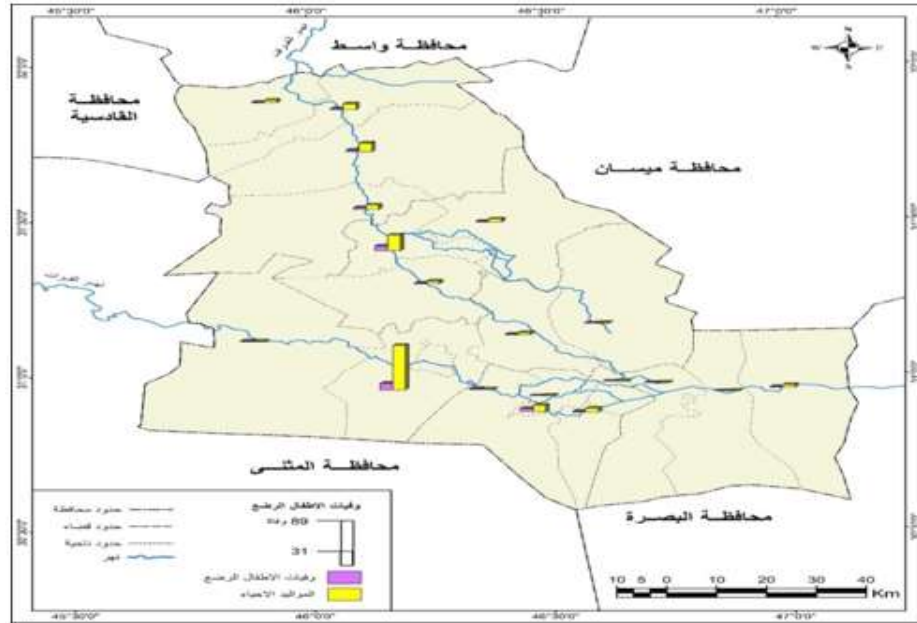
Table 4. Distribution and frequency of infant mortalities born to female health workers across Thi-Qar in 2022.

District	Infant mortalities	Live births	Average	Standard mean
Central Nasseriya	13	89	146.1	0,35-
Ur	0	0	0	0,85-
Batha'	1	1	1000	2,55
Syed Dakheel	1	4	250	0,00
Islah	0	1	0	0,85-
Central Refayee	3	17	176.5	0,25-
Fajr	1	5	200	0,17-
Qalat Sekar	2	12	166.7	0,28-
Nasr	4	9	444.4	0,66
Central Shatra	9	31	290.3	0,14
Duwayah	1	6	166.7	0,28-
Gharraf	1	5	200	0,17-
Central Chibaish	1	5	200	0,17-
Manar	0	1	0	0,85-
Fuhood	0	1	0	0,85-
Central Souk Al-Shuyookh	6	12	500	0,85
Akikah	0	1	0	0,85-
Karma Beni Saeed	2	8	250	0,00
Fadhliya	1	1	1000	2,55
Tarr	0	1	0	0,85-
Governorate	46	210	219.04	

Mean	249.535
Standard Deviation	293.749

Level One (+0.50_more)

This level has been identified in four districts. Batha' and Fdhliya had 1,000 deaths per thousand live births, Nasr had 444.4, and Souk Al-Shuyookh had 500 deaths per thousand live births. High mortalities are due to low education, deteriorating living conditions of female health workers' families owing to outdoor jobs, long non-house responsibilities, and less time for children. Therefore, most female workers cut short maternity leave in first semesters to get full pay.



Map 3. Distribution of infant mortalities born to female health workers across Thi-Qar in 2022.

Level Two (+0.49_0.00)

This level has been identified in three districts. Central Shatra amounted to (290.3), while both Karma Beni Saeed and Syed Dakheel amounted to (250) deaths per thousand live births.

Level Two (-0.01_-0.49)

This level has been identified in seven districts. Chibaish, central Refayee, Duwayah, Qalat Sekar, and central Nasseriya amounted to 200 to 146.1 deaths per thousand live births.

Level Four (-0.50_more)

This level has been identified in seven districts. Infant mortalities amounted to (0) death per 1,000 live births. No single death has been reported in these districts following the findings of the survey analysis.

FINDINGS

1. There are discrepant numbers of live births by married, divorced, and widowed females in the area under study. Three-child females had topped all the other two categories (37.8%). Five-child (and more) females had been rated second (24.6%). The last three categories amounted to (19.9, 12.9, and 4.8) for females who had (four children, two children, and one child) respectively.

2. Marital fertility rates amounted to (453.6) births per 1000 married female health workers.

3. Fetal mortality rates in births by married female health workers amounted to (345.6) per 1000 married female health workers across Thi-Qar.

4. Gross mortalities amounted to (219.04) deaths per (1000) live births by married female health workers across Thi-Qar.

RECOMMENDATIONS

1. It is highly important that deaths in various ages be documented. Hence, necessary measures must be taken to improve documentation, and anti-documentation laws, especially for neonates and infants, must be enacted.

2. Female health workers' awareness of proper birth controls and less children should be raised using various mediums.

3. Hospitals and medical care centers should be provided with maternity care wards for infants born to female health workers to ensure quality and committed services.

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