The Unmet Need for Family Planning among Married Women Attending Primary Health Care Centers in Al- Najaf City, Iraq

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Abstract: Background: Unmet need refers to women of reproductive age who wish to avoid a pregnancy but are not using a contraceptive method. The family planning is regarded as one of the major public health successes in the past decades. Aim: To measure the prevalence and delineate the factors affecting the unmet need for family planning among married women attending primary health care centers in Al-Najaf City. Method: Across-sectional interviewing study targeting 200 currently married women in reproductive age (15-49years) attending PHCCs in Al-Najaf city, the data collected from the 1st of April to the 31st of August 2023, primary health care centers were selected by simple random sampling and participants who met the inclusion criteria were selected by convenient sampling, data were collected by using validated questionnaire from similar studies via face-to-face interviews. The collected data adapted from the revised unmet need for family planning Demographic Health Survey (DHS) were analyzed using the statistical package for the social sciences (SPSS) program version 26 and the unmet need was calculated using the new revised algorithm. Results: The prevalence of unmet need for family planning was 14% (9%for limiting 5% for spacing). Unmet need significantly associated with women's age, women`s education level and their partner's education level P-values were (0.009), (0.001), (0.039) respectively and was also related to parity, number of living children, female children all had the same P-value which was (0.001). 54% did not use contraception due to many reasons related to health, religion, culture and finance. Conclusion: the prevalence of unmet need for family planning is relatively high, although the availability of contraception methods in health institutions are free or subsidized and they are easy to obtain from the pharmacies.

Keywords: DHS, FB, IUCD, IUGR.

INTRODUCTION

1.Definition: Women with unmet need for family planning (FP) defined by the World Health Organization (WHO) as "those who are fecund and sexually active but are not using any method of contraception, and report not wanting any more children or wanting to delay the next child"[Alrawi, Y, 2021]. The number of women who are currently married and in active sexual relationship, with adequate fertility (fecund), and wanted to interrupt or postpone childbearing but are not currently using a contraceptive method; the total number of women with an unmet need for family planning (FP) represent two groups of women:

(a) Those with an unmet need for limiting.
(b) Those with an unmet need for spacing [Komasawa, M. *et al*., 2020].

The unmet need for family planning is one of the indicators used to determine the achievement of universal reproductive health coverage, Family planning is one aspect of women's rights and constitutes the major feature of their reproductive health, Unmet need for family planning provides a measurement of the ability of women in achieving their desired family size and birth spacing [Asmamaw, D. B. *et al*., 2022][Al-Mohaisen, S. *et al*., 2021]. The unmet need for family planning highlights the gap between women's reproductive intentions and their contraceptive

behavior [Tadele, A. *et al*., 2019]. This indicator was useful for tracking progress towards the goal of achieving universal access to reproductive health and the information on contraceptive prevalence complements. The sum of the prevalence of contraceptives and unmet need indicates the total demand for family planning, the sum of the unmet need for family planning and prevalence of traditional methods indicates the degree of unmet need for modern methods [Khalil, S. N. *et al*., 2018] [Letamo, G. *et al*., 2015] [Cahill, N. *et al*., 2018].

2.Family planning is a human right:
Offering of contraception methods and facilitate the access to the family planning services are a human rights. This has a major role in save lives and promote healthier populations. Over the past 25 year great strides have been made in making family planning methods available to the needy population. As of March 2020, there were an estimated 450 million women, in 114 low- and middle-income countries, were using modern contraception method ending unmet need for family planning by 2030 is one of United Nation Population Fund Agency (UNFPA's), three Sustainable development goals [Sharma, K. A. *et al.,* 2020] [Perehudoff, K. *et al.,* 2022]. Family planning is considered as an important public

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health issue because of its association with social and health outcomes for both mothers and children [Al-Azawi, H. K. *et al.,* 2016]. Global and national authorities should consider classifying family planning as an essential health service and assuring expedited port and customs clearance and distribution logistics for the allocation of contraceptives. In addition, it is important to ensure the continuity of funding, including national public resources, for family planning services and supplies [Temmerman, M. *et al.,* 2021] [Zan, L. M. *et al.,* 2020]. One of the crucial issues expressed at the International Conference on Population and Development is the fundamental right of all couples and individuals, to decide freely and responsibly about the number and spacing of their children, and to have the information, education and means to do so this. To achieve this right, it is essential to provide the access to voluntary (FP), especially effective contraceptive methods, for women and men is imperative. (FP) is not only important to directly improve reproductive health outcomes, but is also positively associated with improvements in health, schooling and economic outcomes [Letamo, G] [Axelson, S. M. *et al.,* 2022] [Andreeva, E. N. *et al.,* 2023].

3. The aims for using contraception:
The aims for using contraception are for not get more children (limiting) or for postponing the next pregnancy (spacing) for this purpose the women used:

1.Traditional method (abstinence, withdrawal, lactational amenorrhrea and others).

2. Modern methods:
a. Hormonal methods like: pills, injection, implants and hormonal IUCD.
b. Non- hormonal methods like: condom (male or female), copper intrauterine contraceptive device and sterilization female and male [Festin, M. P. R. *et al.,* 2020]. It has been observed that data on unmet need can help family planning programs target activities by identifying women who are at greatest risk of unintended pregnancy and more likely to adopt methods than other non-users [Woldeamanuel, B. T. *et al.,* 2023] [Li, Z. *et al.,* 2020]. In addition, the concept of unmet need places women's personal reproductive preferences, rather than numerical targets for fertility and population growth, at the centers of family planning services [Letamo, G] [Ahinkorah, B. O. *et al.,* 2020]. Effective contraception allows a

physical relationship without fear of an unwanted pregnancy and ensure the freedom to have children when desired. the aim is to provide contraception with maximum comfort and privacy with minimal costs and side effects [Jain, R. *et al.,* 2011] [Manet, H. *et al.,* 2023]. Although all these methods were relatively available there was a percentage of married women who want to use them but not do, due to certain reasons.

4.Reasons for not using contraception method:
According to studies, the reasons why women with unmet needs do not plan to use contraceptives include:

1.Health problems.
2.Lack of comprehensive knowledge about each contraceptive method.
3. Fear of having children in the future.
4. Disapproval of family planning by partner and others.
5. Fear of side effects and low risk of conception.
6. The price of contraceptives and their unavailability.
7.Lack of access.
8.Other reasons personal cultural and religious [Khalil, S. N] [Mulugeta, S. S. *et al.,* 2023] [Takyi, A. *et al.,* 2023] [Amoah, E. J. *et al.,* 2023].

5.Risk from not using contraception:
Women who do not use contraception run the risk of unwanted pregnancies which endangering their health and that of their families and also placing a burden on society [Khalil, S. N] [Mahfouz, M. S . *et al*, 2023]. The prevention of unintended pregnancies helps to reduce poor maternal health and the number of pregnancy-related deaths, delaying pregnancies in young girls who are at higher risk of health problems from early childbearing, and preventing pregnancies among older women who also exposed to high risks, consider an important health benefits from family planning [Puri, M. C . *et al*, 2021].

Despite women are the primary focus of most of the services offered, unmet need also has an impact on individual, interpersonal, familial and societal at large as well as implications for healthy births and babies. Women with unmet need for spacing and limiting have elevated risk of under-five mortality, although unmet needs are related to complex factors range of constraints can prevent women from family planning service like demographic, socioeconomic factors and proximate factors may prevent women from accessing family planning services [Getaneh, T . *et*

al, 2020] [Karra, M . *et al*, 2022]. Inter-pregnancy intervals (intervals between delivery and conception of the subsequent pregnancy) of less than 18 months appear to be associated with an increased risk of adverse outcomes, including preterm birth, small-for-gestational-age (SGA) births, and infant mortality. Based on these relationships, postpartum clinical practice and public health guidelines recommend an inter-pregnancy interval of at least 18 to 24 months [Hanley, G. E . *et al*, 2017] [82]. Parity and maternal age have been shown to increase the risk of adverse neonatal outcomes such as: intrauterine growth restriction (IUGR), prematurity, and mortality. Nulliparous may confer risk of birth complications such as obstructed labor, while high parity has been associated with an increased risk of hypertension, placenta previa, and uterine rupture [Htay, Z. W . *et al*, 2023] [Kozuki, N . *et al*, 2013]. Despite the sharp increase in contraceptive use among several developing countries, inter-birth intervals have increased only slightly over the past 25 years 25% of second-order were the higher-order in children born within two years of a sibling, therefor birth intervals were often short primarily because of a poor knowledge of health risks associated with short inter-pregnancy intervals and low uptake of contraceptives during this period [Puri, M. C. *et al*, 2021].

6. Women empowering about contraception use:
In many societies, the health of women and their children is adversely affected by women's low social status within households. This is mainly due to women's culturally and socially determined roles, which permeate all aspects of their lives [Hameed, W . *et al*, 2014]. South Asian women sacrifice their desire to regulate their fertility because they are raised to let interest of their family-group supersede their personal desire [Efendi, F . *et al*, 2023]. Consequently, women's empowerment is recognized as an imperative element to enable couples to access reproductive health services - including family planning- to improved maternal and child health. It is suggested that gender-based control in relationships is associated with sexual- and reproductive-health outcomes [Asmamaw, D. B . *et al*, 2023]. Improving the quality of contraceptive counseling is one strategy to prevent unintended pregnancy. We identify aspects of relational and task-oriented communication in family planning care that can help providers to meet the needs of their patients' [Patrikar, S. R . *et al*, 2014]. Approaches to optimizing women's experiences with contraceptive counseling include building close, trusting relationship with patients and using a shared decision-making approach that focuses on identifying and responding to patients' preferences [Htay, Z. W. *et al*, 2021] [Dehlendorf, C . *et al*, 2014]. Providing advice about side effects and using strategies to promote contraceptive continuity and adherence can also help optimize women's contraception use [Dehlendorf, C . *et al*, 2014].

7. Associated factors with unmet needs for family planning:
Over the past two decades, most researches into the causes of unmet needs have used data collected under the Demographic and Health Surveys (DHS) Program. Studies came in two forms:

(1) Analysis of social and demographic correlates of current contraceptive use, such as region, education and number of living children.
(2) Analysis of the (DHS) articles on self-reported reasons for nonuse.

The former body of evidence – studies of social and demographic correlates of unmet needs-is certainly informative for policy and program purposes, as it provides a basis for targeted investment and training of program staff, but this is only implicit and requires an imaginative exercise on the part of the analyst. Studies of social and demographic contexts were not a substitute for explicitly examining the direct causes of unmet needs [6][7] [Moreira, L. R] [Almeen, M. I. *et al*, 2016]. Adequate understanding of the extent of an unmet need for family planning and the factors associated with it has paramount importance in addressing the problems related to non-utilization of family planning services. It made significant contributions to improve the health conditions of women and children and the country's underlying socio-economic problems [Karra, M. *et al*, 2022] [Garo, M. G. *et al*, 2021]. There were studies examining the unmet need for family planning and its associated factors, and there was little evidence exists regarding of unmet need for family planning, particularly in areas experiencing increase industrialization and internal migration, rapid urbanization had profound effect on population health. There may be contextual differences among the study participants in different settings [Asmamaw, D. B, 2023] [WHO].

8. Epidemiology:

The number of women seeking family planning has increased significantly over the past two decades, from 900 million in 2000 to nearly 1.1 billion in 2020. As a result, the number of women using a modern contraception has increased, from 663 million to 851 million also the prevalence rate of contraceptive increased from 47.7 to 49.0 percent. An additional 70 million women are expected to join the workforce by 2030 [WHO]. Ensuring all people have access for to their preferred contraceptive methods promote multiple human rights, including the right to life and liberty, freedom of opinion and expression and the right to work and education, and provides important health and other benefits. It offers a range of potential non-health benefits, including educational opportunities and empowerment for women, and sustainable population growth and economic development for countries [Alrawi, Y, 2021] [WHO]. Globally, many women and couples want to delay or avoid pregnancy, In2020 of the 1.9 billion women of reproductive age (15-49 years), 1.1 billion women are expected to have a need for family planning, meaning they want to limit or delay having children. Of these women, 851 million are using a modern method of contraception and 85 million are using a traditional method. An additional 172 million women do not use any method despite their desire to avoid pregnancy, and therefore have an unmet need for family planning [www.un.org/]. In the Arab region, 44% of married women aged (15-49) years used modern family planning methods in 2014; However, according to a median estimate from 2016, the unmet need for family planning in Saudi Arabia, Egypt and Jordan reach to 24.1%,12.2% and 11.9% respectively [UN, DESA]. In Iraq the unmet need for family planning among married women was 22.8%, according to the 2011-2012 Iraqi Women Integrated Social and Health Survey 2011-2012 (I-WISH) [Almeen, M. I. *et al*, 2016]. Despite the global decline in the proportion of women with unmet family planning needs, the global number of women with unmet needs for family planning has increased due to the continued growth in the size of the population of women of childbearing age [www.un.org]. In Iraq the researches for unmet needs for family planning 2007 the percent was 35% in Dohuk.2010 was 34% in Mosul,2016 was 28% in Baghdad [Almeen, M. I. *et al*, 2016] [Agha, S. Y. *et al*, 2021] [Al-Jawadi, A. A. *et al*, 2010]. In 2021 Contraceptive prevalence in Iraq remains relatively low (58%) compared to other countries in the Eastern Mediterranean Region, and the unmet need (12%) and total fertility rate (4.2 children per woman) still high. The services are available free of charge or heavily subsidized in many public and private health clinics, but many women may still not use them due to social, cultural, financial or health care services constraints [Alrawi, Y, 2021] [www.un.org/]. Therefor it is important to measure unmet need and highlights on why it is still raised.

Aim of study: Goal of the study is to determine the unmet need for family planning services and identify factors associated with it among currently married women in reproductive age in Al-Najaf City.

SUBJECTS AND METHOD
2.1 Study design, setting and time frame:
Across sectional interviewing study targeted currently married Iraqi women in reproductive age group (15-49) years old with active sexual relationship who are attended primary health care centres(PHCC) in Al-Najaf City the sample selected from two health sectors, Al-Najaf north sector where there were 12 central PHCCs and Al-Najaf south sector which contained 10 central PHCCs, 30% of them were taken, three (PHCC) from north sector and the same from south sector selected by simple random sampling, 27 women from each (PHCC) who were selected by convenience sampling for participation in this study. The data collected from the 1st of April to the 31st of August 2023.

2.2 Studied Population:
2.2.1 Inclusion criteria:
The study included:
1. Fecund, (fertile) Women who are not pregnant or postpartum and do not want to have more children (want to limit family size) or who want to postpone the birth of a child for at least two years or do not know when and if they want another child (want to space births) but do not use any contraceptive method.
2. Pregnant women, whose pregnancy unwonted or mistimed, at the time of interview. Postpartum amenorrhea who have not had a menstrual period since the birth of their last child and their last child was born in the period 0-23 months at time of interview and not use contraception for limiting or spacing.

2.2.2 Exclusion criteria:
Excluded from this study:
1. Women done hysterectomy (surgical removal of uterus).

2. Primary amenorrhea (due to genetic problems that affecting reproductive system such as Turner syndrome or hormonal issues like pituitary gland problem)
3. Pregnant due to contraceptive failure.

Women are considered infecund if they married from five or more years ago, have not had a birth in the past five years are not currently pregnant and have never used a contraceptive method or they self-report that they are infecund, menopausal or have had a hysterectomy, never menstruating, or have been postpartum amenorrhea for 5 years or longer or (for women who are not pregnant or in postpartum amenorrhea) their last menstrual period occurred more than six months prior to the study [www.un.org].

2.3 Sample Size and sampling technique: [Khan, G. R. *et al.,* 2023]

$$\text{the sample size(N)} = \frac{Z^2 * P * Q}{D * D}$$

The Sample size (N) measured by this equation: where Z represented 95% confidence interval which equal to 1.69, P the last prevalence of unmet need for family planning was 12 %.2021 according to WHO [Alrawi, Y, 2021], Q equal 1-p 88%, D the sample error which was considered 5%.
= (1.96)*(1.96)* (0.12)*(0.88)/(0.05)*(0.05)
=160

Those 160 women divided on six PHCC distributed as 27 eligible women for each PHCC interviewed after introducing the author then explaining about the aim of the study and questionnaire component and taking verbal consent. To compensate for non-responding and to be more representative the sample upgraded to 200 women which selected by convenient sampling technique was used to recruit the women from the six (PHCCs) the sample was distributed among the selected PHCCs. For collecting the information comfortably from women and without interrupting the work in the units of (PHCCs), the interview was taken place in a private rooms and data collected from women waiting for lab results, dental visit, antenatal care visit, integrated management of neonatal and childhood illness (IMNCH)visit and also relative females coming with them.

2.4 Study variables:
The variables in this study were the unmet needs for family planning which represented the dependent variable, the independent variables were socio-demographic factors (age of woman, residence, occupation and educational status of women and her husband), economic and reproductive factors (average monthly income, age at marriage, parity, number of previous pregnancies, abortions, live children, gender of them, contraception use and whom the decision maker for using and the type of contraception if the women used and if not used the reason for not using).

2.5 Data Collection:
Socio-demographic, personal and reproductive information had collected by using questionnaire adapted from similar studies [Asmamaw, D. B] [Khalil, S. N] [Letamo, G]. After being presented to the expert committee and gave their opinions and observations and take it into consideration, then applied via face-to-face interviews to the participants and also adapted from the revised unmet need for FP: Demographic Health Survey (DHS) [USAID, 2011].
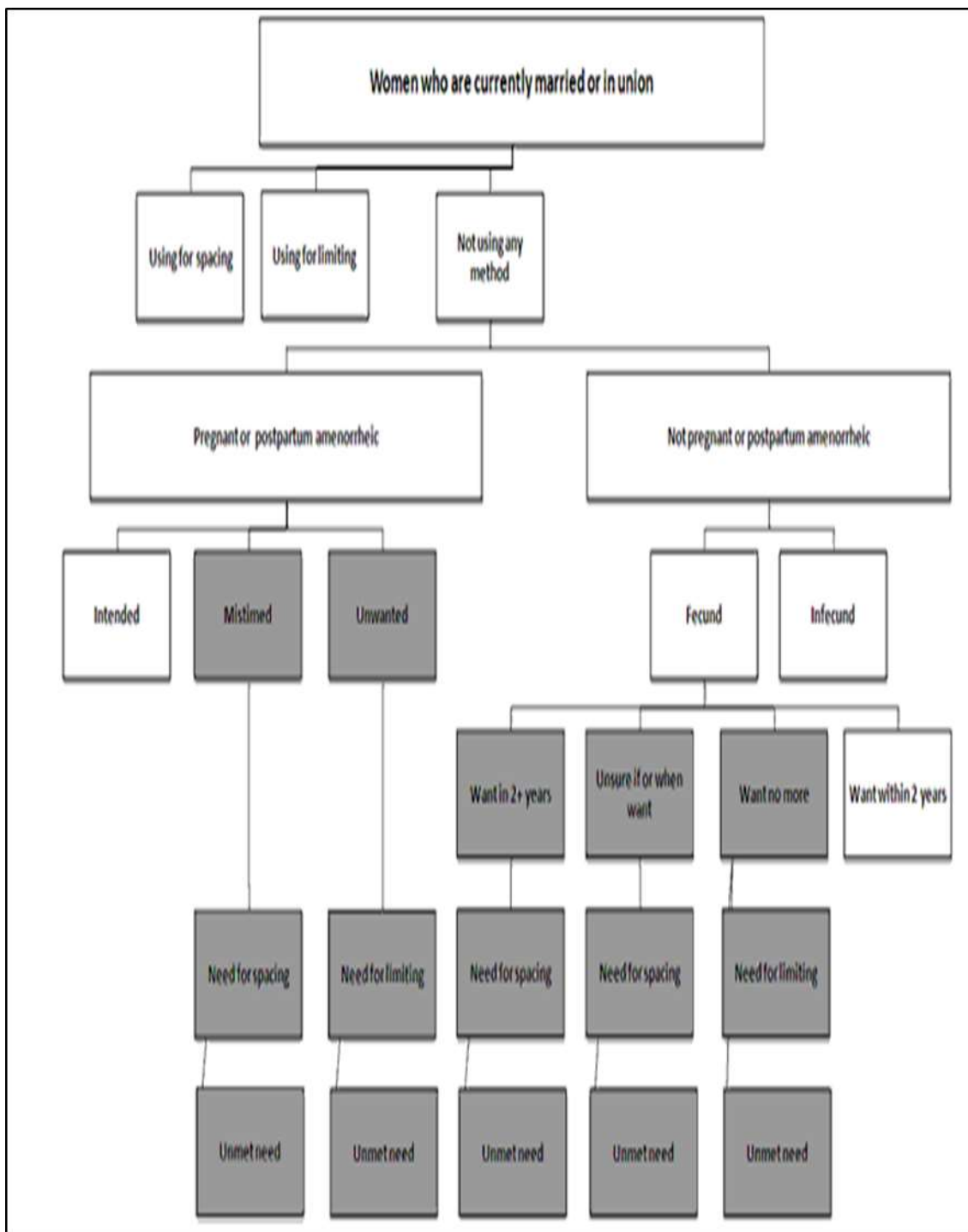
Then the unmet need calculated by using the new revised algorithm that shown below [Alrawi, Y, 2021][Asmamaw, D. B][Khalil, S. N][Letamo, G].

A validated questionnaire was used to collect data for this study. The questionnaire included sociodemographic variables, reproductive history and different aspect of contraceptive practice among the women.

Unmet need was calculated using the revised definition of unmet need for family planning described by Bradley, *et al*.

{Unmet need for Family planning = Women (15-49) years of age who are married and have an unmet need for family planning ÷Total number of women of reproductive age (15-49) who are married in studied sample X 100} [Hardee, Karen].

2.6 Pilot study:

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Two weeks before data collection pilot study was conducted with 15 women to assess the questionnaire reading comprehensiveness and language as well as time required for the interview and if there were any difficulties or need for modification. The data from the pilot study were not included in the main study.

2.7 Ethical issues:

1. Ethical approval and official agreement from Iraqi Board for Medical Specialization.
2. Getting the official agreement from Al-Najaf health directorate and the two sectors
3. 3.Participants were also assured verbally about the study's purpose, voluntary nature, anonymity and technical requirements in another ward data were kept confidentially; names of the participants would substitute with identification code.

2.8 statistical analysis:

The data collected were coded and analyzed using the Statistical packages for social sciences(SPSS) version 26. Continuous variables were presented as Mean ± SD (standard deviation) while categorical variables were presented as number and percentage. Bar chart used to classify the participants as having unmet or met needs. Chi–square test was performed to assess statistical association between variables. P value ≤0.05 was considered significant.

RESULTS

Socio-demographic and economic characteristics of responders: The study included 200 women of childbearing age, the minimum age of participants was 16 years old, the maximum age was 49 years old and the mean age was (30.29±8.81) years old. Of them, 78(39%) had an age range from 20-29 years old. Regarding their educational level, 64(32%) completed their primary education and 54(27%) their secondary education. Most of the participants 164(82%) were from urban residences, 158(79%) were unemployed and the partners' educational level was in secondary 78(39%) and college and above 71(35.5%). The family income was fall between 500000-1000000IQD for 120(60%) of them as shown in Table 1.

Reproductive health characteristics of responders: Regarding the reproductive health features of the participants, 134(67%)were married at the age of 12 -21 years old. The majority were multiparous, representing 163 (81.5%), the nulliparous were about 37 (18.5%). Regarding other reproductive characteristics included number of living children 181(90.5%) in group ranged from 0-5child, the number of male 177(88.5%) had 0-2 male child. Regarding the number of female children were 162(81%) in group had 0-2 children and there was no abortion in 164(82%) of participants as shown in Table 2.

Table 1: Socio-demographic and economic characteristics of participant women.

Variable	Subgroup	No.	%
Age group (years)	less than 20	24	12
	20-29	78	39
	30-39	52	26
	40-49	46	23
Level of education	Illiterate	42	21
	Primary	64	32
	Secondary	54	27
	College and above	40	20
Occupation	Employed	42	21
	Unemployed	158	79
Residence	Urban	164	82
	Rural	36	18
Partner's level of education	Illiterate	23	11.5
	Primary	28	14
	Secondary	78	39
	College and above	71	35.5
Monthly income	< 500000 IQD	32	16
	500000-1000000 IQD	120	60
	>1000000 IQD	48	24

Table 2: Reproductive health characteristics of the participant women

Variable	Subgroup	No.	%
Age at marriage (years)	12-21	134	67
	22-31	60	30
	32-41	6	3
Parity	Nulliparous	37	18.5
	Multiparous	163	81.5
Number of previous pregnancies	0-2	87	43.5
	3-5	81	40.5
	6+	32	16
Number of living children	0-5	181	90.5
	6-10	19	9.5
Number of male children	0-2	177	88.5
	3-6	23	11.5
Number of female children	0-2	162	81
	3-7	38	19
Abortions	0	164	82
	1-2	27	13.5
	3-5	9	4.5

Contraception details: Table.3 illustrates the contraceptive details of the participants. 92(46%) used contraception methods. Of them 40(43.5%) used contraceptives for spacing, while the rest 52 (56.5%) used them for limiting. Regarding the type of contraception, 29(31.5%) used pills, 15(16.3%) used intrauterine contraceptive devices (IUCD), 12(13%) used injections, 6(6.5%) used condoms, 3(3.3%) used implants, 3(3.3%) used lactation amenorrhea method (LAM), the calendar or rhythm was the least method of using 1(1.1%). While the remaining 23 (25%) participants used other methods such as withdrawal, tubal ligation, spermicidal agents, and vaginal douching. The decision of using contraception was made by both the women and their husbands for more than half 53(57.6%). While for 32(34.8%), the decision for using contraceptives was taken by the women as shown in Table 3.

Table 3: Contraception details of the participant women

Variable	Subgroup	No.	%
Contraception using	Yes	92	46
	No	108	54
Purpose*	Spacing	40	43.5
	Limiting	52	56.5
Type of contraception	Injection	12	13
	Pills	29	31.5
	Implant	3	3.3
	IUCD	15	16.3
	LAM	3	3.3
	Condom	6	6.5
	Calculation	1	1.1
	Others	23	25
Decision make to use contraception	Woman	32	34.8
	Husband	7	7.6
	Both	53	57.6

*for those using OCP.
**For those not using.

Regarding the reasons for not using cntraception methods, the reasons classified to Fear of side effects represented one-quarter of the reasons behind not using contraception 7(25%) followed by husband and other disapproval 6(21.4%), 3(10.7%) because of health concerns and also

3(10.7%) the cause was decreased amount of breast milk. Two (7.1%) due to amenorrhea after birth 2(7.1%) due to religious and cultural causes and one of the participants (3.6%) answered that the suitable method that she desired (implant) was

expensive and not available in primary health care centers or hospitals. Four (14.3%) of the responders their answers were miscellaneous (others) related to personal factors as shown in figure 1.
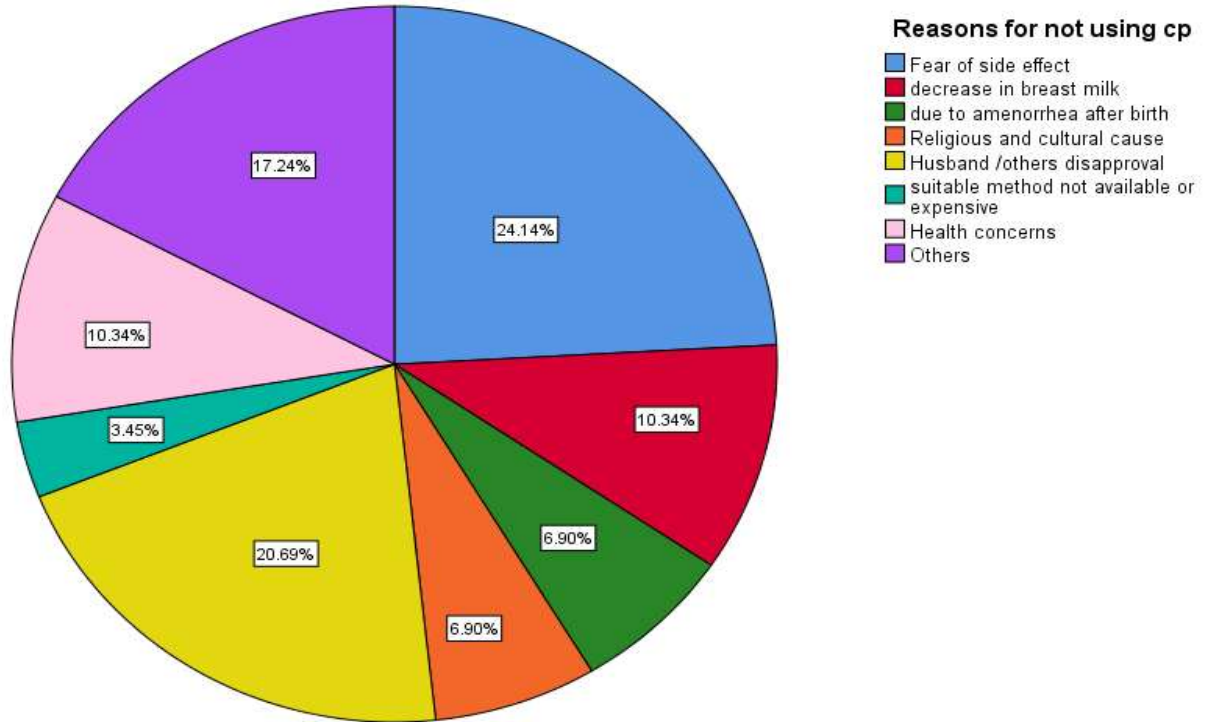

Figure 1: classification of reasons for not using contraception methods among participants.

Regarding the prevalence of unmet need for family planning Figure 1 illustrates the percentage of the

unmet need for family planning represented 28(14%) from the total sample
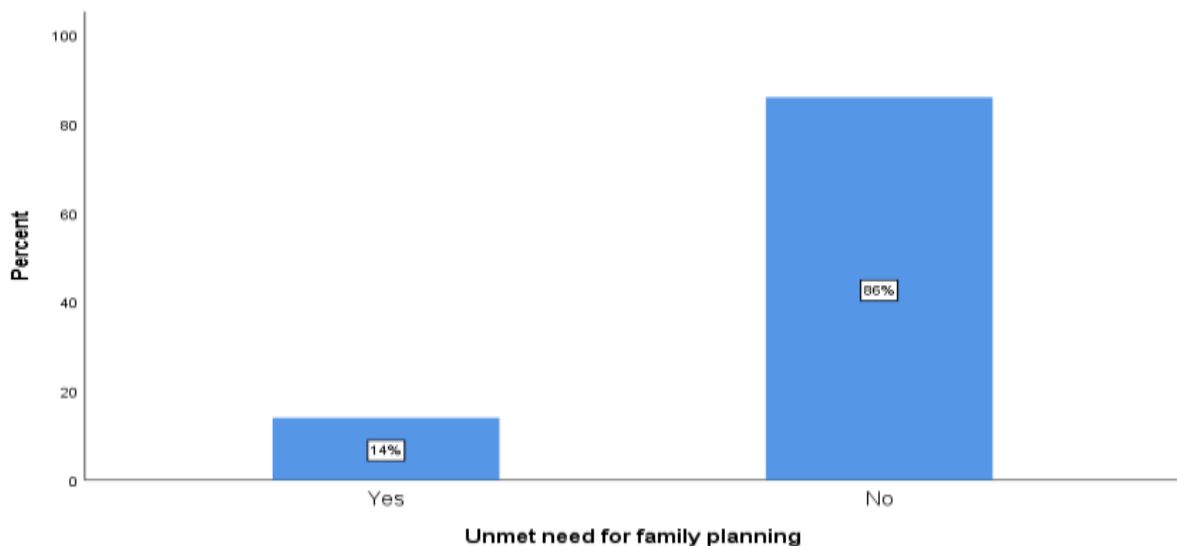

Figure 2: classification of women according to the met needs unmet needs for family planning among the participants.

Figure 3 illustrates that the total number of participants was 200. ninety-two (46%) used

family planning methods, of them [40(20%) for spacing and 52(26%) for limiting] while 108

(54%) who were not using family planning methods divided into [pregnant and postpartum amenorrhea] this represent 64(32%) and [not pregnant not postpartum] that represent (44)22%. From pregnant and postpartum 47(23.5%) wanted their pregnancy and their last child and 17(8.5%) were unwanted. From those 17(8.5%) participants, 9(4.5%) unwanted more children represented the unmet need for limiting, while for the rest 8(4%), their pregnancy or last child was mistimed, representing an unmet need for spacing. The non-

pregnant not postpartum women 41(20.5%), were divided into fertile(fecund) and infecund3(1.5%), from fertile women 30(15%) who wanted their last birth, and 9(4.5%)unwanted more children represent the unmet need for limiting, and 2(1%) unwanted within 2 years represent unmet need for spacing.

According to this the total unmet need for family planning 14%. as shown in the below algorithm:
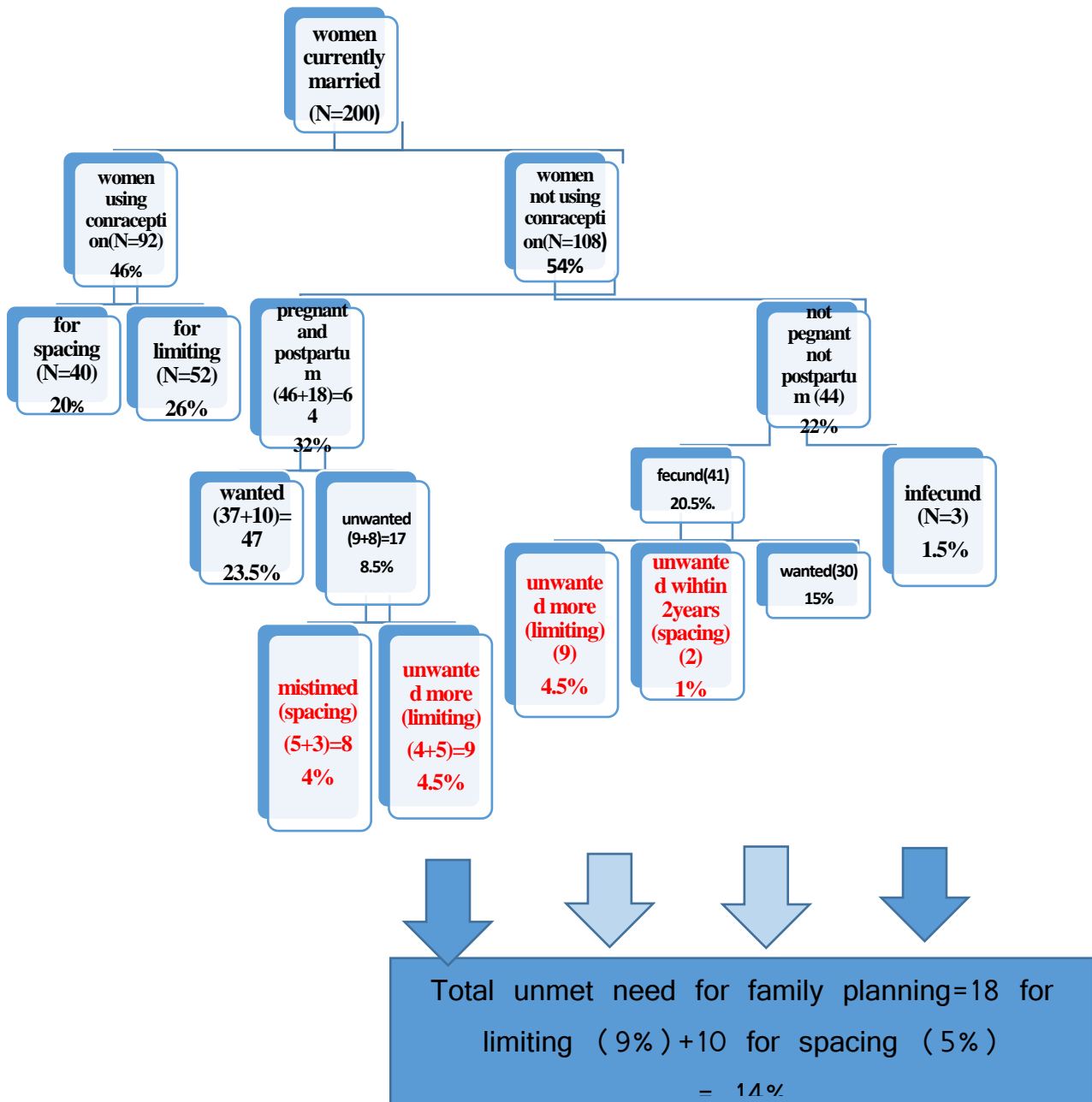

Figure 3: Algorithm for calculation of the unmet need for family planning among the studied sample, Al-Najaf city 2023, N=200

Relationship between the unmet need for family planning with socio-demographic and economic characteristics of the studied sample:

Regarding the association between the unmet need and participant's socio-demographic and economic characteristics, there was a statistically significant association between women's age and unmet need (P-value=0.009), the highest percentage was 10(47%) among the age group 40-49 years old while the met need was high in age group range 20-29 years old (80.5%), also significantly associated with the participant's educational level (P-value =0.0001) and the unmet need was high in illiterate 16(64%) while the met need high among those with secondary education level 24(92.3%). There was no significant association between unmet need and participant's occupation (P-value=0.175) and the residence (P-value=0.169). The partner's educational level was significantly associated (P-value=0.039) with the unmet need as it high among illiterate 8(50%) and the met need high in collage and above 31(83.8%). monthly family income (P-value=0.757) was not significantly associated to un meet need, as shown in table 4.

Relationship between the unmet need for family planning and reproductive characteristics of the studied sample:

Regarding the relationship between reproductive characteristics and the unmet need, there was no significant association between the age at marriage and unmet needs (P-value=0.87), however the unmet need was high 9(29%) among age group 22-31 years old. There was a significant associated between parity and unmet need (P-value=0.0001), the highest percentage was among multiparous 28(38.9%) while the met need high among nulliparous 36(100%). The number of previous pregnancies was significantly associated with the unmet need (P-value = 0.0001), women, who had 6 and more pregnancies, found to have the highest percentage of unmet need 8(72.7%), and the met need was high 53(91.4%) among women having 0-2 pregnancies. The unmet need related to number of living children (P-value= 0.0001), the highest percentage of unmet need 6(100%) was among group of women who had 6-10 living children, the met need was high among women had 0-5 children 80(78.4%). There was no significant association between the number of male children (P-value=0.166). Among the group of women had 3-7 female children the unmet need was associated significantly with the number of female children (P-value =0.0001) and the percentage was 12(80%). While the met need 77(82.8%) among women had 0-2 female children. The previous abortions (P-value=0.230) were not associated with unmet need, as in table 5.

Table 4: Relationship between the unmet need for family planning with socio- demographic and economic characteristics of the studied sample

Variables		Unmet		Total	P-value
		Yes(n=28) No.(%)	No(n=80) No.(%)		
Age group (years)	less than 20	1(5%)	19(95%)	20(100%)	0.009
	20-29	8(19.5%)	33(80.5%)	41(100%)	
	30-39	9(34.6%)	17(65.4%)	26(100%)	
	40-49	10(47.6%)	11(52.4%)	21(100%)	
Women's level of education	Illiterate	16(64%)	9(36%)	25(100%)	0.0001
	Primary	6(17.6%)	28(82.4%)	34(100%)	
	Secondary	2(7.7%)	24(92.3%)	26(100%)	
	College and above	4(17.4%)	19(82.6%)	23(100%)	
Occupation	Employed	3(14.3%)	18(85.7%)	21(100%)	0.175
	Unemployed	25(28.7%)	62(71.3%)	87(100%)	
Residence	Urban	21(23.3%)	69(76.7%)	90(100%)	0.169
	Rural	7(38.9%)	11(61.1%)	18(100%)	
Partner level of education	Illiterate	8(50%)	8(50%)	16(100%)	0.039
	Primary	6(37.5%)	10(62.5%)	16(100%)	
	Secondary	8(20.5%)	31(79.5%)	39(100%)	
	College and above	6(16.2%)	31(83.8%)	37(100%)	
Monthly income	< 500000 IQD	7(31.8%)	15(68.2%)	22(100%)	0.757
	500000-1000000 IQD	17(25%)	51(75%)	68(100%)	
	>1000000 IQD	4(22.2%)	14(77.8%)	18(100%)	

Table 5: Relationship between the unmet need for family planning and reproductive characteristics of the studied sample

Variables		Unmet		Total	P
		Yes(n=28) No.(%)	No(n=80) No.(%)		
Age at marriage (years)	12-21	18(25%)	54(75%)	72(100%)	0.870
	22-31	9(29%)	22(71%)	31(100%)	
	32-41	1(20%)	4(80%)	5(100%)	
Parity	Nulliparous	0(0%)	36(100%)	36(100%)	0.0001
	Multiparous	28(38.9%)	44(61.1%)	72(100%)	
Number of previous pregnancies	0-2	5(8.6%)	53(91.4%)	58(100%)	0.0001
	3-5	15(38.5%)	24(61.5%)	39(100%)	
	6+	8(72.7%)	3(27.3%)	11(100%)	
Number of living children	0-5	22(21.6%)	80(78.4%)	102(100%)	0.0001
	6-10	6(100%)	0(0%)	6(100%)	
Number of male children	0-2	25(24.5%)	77(75.5%)	102(100%)	0.166
	3-6	3(50%)	3(50%)	6(100%)	
Number of female children	0-2	16(17.2%)	77(82.8%)	93(100%)	0.0001
	3-7	12(80%)	3(20%)	15(100%)	
Abortions	0	19(21.3%)	70(78.7%)	89(100%)	0.230
	1-2	7(58.3%)	5(41.7%)	12(100%)	
	3-5	2(28.6%)	5(71.4%)	7(100%)	

DISCUSSION

Unmet need is a rights-based measure that helps determine the extent to which a country's health system and social conditions support the women's ability to achieve their stated preference to delay or limit childbearing [www.who.int].Family Planning was argued to be one of the most effective global strategies in maintaining and developing women's health. UNICEF establishes universal access to reproductive healthcare services as a key part in ensuring women survive and thrive [UNICEF]. Over the last several years, there were increasingly interrogating programs and practices to ensure the rights of clients are considered and respected [Coulson, J. *et al.*, 2023]. WHO was giving great attention to the family planning programs for reducing rates of unintended pregnancies, reduces the need for unsafe abortion and reduces unsafe abortion [Narjis, A.-H. A . *et al.*, 2015]. This could be also benefit in the education of girls and create opportunities for women to participate more fully in society, including paid employment [Coulson, J. *et al.*, 2023]. Globally, lots of studies conducted about the unmet need for family planning in the last years, the studies focused on low and middle income countries like study done in Turkey in 2023 by Ökem, Zeynep Güldem *et al* and in 2015 by Wulifan, Joseph K [www.iasj.net] [Ökem, Z. G. *et al.*, 2023] [Li, Y.-Y. *et al.*, 2023] [Obeagu, E. I. *et al.*, 2023] [Asif, M. F. *et al.*, 2019]. In current

study the prevalence of unmet need for family planning was 14% this closed to WHO percent (12%) of unmet need for FP in Iraq in 2021and similar to that in Jordan 2018 (14%), Algeria 2019 (14%), Bagladesh2019(14%), Rawanda2020 (14%) while was (12%) in Turkey 2018, 13% in Kenya, Argentina 2020 and was15% in Uganda 2021, Dominican 2019, Albania 2018 all these percentages were asymptotic to that of our study [Alrawi, Y, 2021] [Wulifan, J. K. *et al.*, 2015]. In Iraq the studies about the unmet need for family planning started at 2003 the prevalence was 29.3%in Duhok and in 2009 was 20.2% in Mosul The last study in Baghdad in 2016 the prevalence was 28.1% [Almeen, M. I. *et al.*, 2016] [45] [46]. The result in our study was less than those mentioned studies this might be inconsequence of rising the availability of contraceptives, accessibility, the education and counselling by health professionals, influence of the male partner [47]. Our study revealed an association between age of participant and unmet need for FP the higher percent (47.6%) was in women age ranged from 40-49years old. Similar to these studies one of them done in Egypt in 2021 Sherehan Adel Abdelsalam *et al* and another study contributed by Obeagu, Emmanuel Ifeanyi [Almeen, M. I. *et al.*, 2016] [Agha, S. Y . *et al.*, 2007] [Al-Jawadi, A. A . *et al.*, 2010] [Li, Y.-Y. *et al.*, 2023] [Data world bank]. This could be explained when the women got older, their need for contraception decreased

and the younger women often had a strong fertility desire as the study occurred in 2018 in Turkey [Abdelsalam, S. A . *et al*., 2021]. Regarding the association between educational level of women and their partners with the unmet need for FP as the educational level became high the unmet need for FP decreased which is similar to that in these studies [Almeen, M. I. *et al*., 2016] [46] [www.iasj.net] [Sensoy, N . *et al*., 2018]. Since more educated women can better understand the benefits and risks of contraception and women empowered through education had good knowledge and have better access to health facilities compared to uneducated women and increase the awareness for control and regulation fertility like in these studies like studies in Ethiopia 2019 done by Solomon, Tesfaye, Mamo Nigatu *et al* and study done in 2021 in Ethiopia by Amaje, Elias; Ayalew, Tatek, *et al*. [Sensoy, N . *et al*., 2018] [Solomon, T . *et al*., 2018]. Multiparous women had a significant percentage of unmet FP needs, which could be due to the larger number of children the woman had; the more likely she wants to space or limit the number of children she would have. This implies they did not use family planning even more and had an unmet need [Sensoy, N . *et al*., 2018]. There was association between the child gender and unmet need for FP the unmet increase in women who had female children which is agreed with the study in Bangladesh in 2020 done by Hoq, Mohammad Nazmul, *et al*.

The women tried to get more children until the male child came so the women with high number of female children had high unmet need for family planning and they delayed their use of contraception until they got male [Amaje, E . *et al*., 2020] Factors influencing a preference for a male child may include, but are not limited to, income earned as head of household; fewer opportunities for females to find employment and generate income outside the home; low literacy rates, particularly among women; protecting parents in old age; stay in the family; cultural restrictions for women; and cultural beliefs like studies obtained in India 2021 done by Aksan, Anna-Maria and another study in India contributed in 2023 done by Singh, Jayendra K.; *et al* [8] [Hoq, M. N, 2020] [Aksan, A.-M, 2021]. Forty-six percent of women involved in our study use a contraception method and this close to the percent from previous local studies but is lower than the percent in the most recent local and Arabic studies this might be because increase in the Iraqi population over the last decades in compared to

availability of contraception methods, the education toward the proper use of contraception remain suboptimal, misconceptions about family planning methods and increase rate of infertility like study in Nigeria 2021 done by Mbachu, Chinyere Ojiugo *et al* [Alrawi, Y, 2021] [Almeen, M. I . *et al*., 2016] [Agha, S. Y . *et al*., 2007] [Al-Jawadi, A. A . *et al*., 2010] [Singh, J. K . *et al*., 2021]. The purpose for using the method was either for limiting 56.5% or for spacing43.5% contributed to that the women tend to use contraception after had the enough number of children and those who want to have children after a period of time were less likely to use contraceptives than women who had completed their family like study in Saudi Arabia in 2018 done by Alsaleem, Mohammed. A, *et al*. [Almeen, M. I . *et al*., 2016] [Mbachu, C. O . *et al*., 2018]. The most common type used was contraceptive pills 31.5 % because it is easy to use, highly effective, with less un desirable side effect so it is most revolutionary of all. then IUCD 16.3%, this on account of its' availability and it is long term method. the condom was not commonly used as a contraception or for protection from STDs this because of certain misconceptions its' high failure rate and decrease pleasure so it is not popularly used. like in Saudi Arabia 2020 done by Abdel-Salam DM *et al* and in 2023 done by Alsharif SS *et al* also in Saudi Arabia, in Nigeria 2021 done by Mbachu, C.O., *et al*. [Abdel-Salam, D. M . *et al*., 2020] [Alsharif, S. S . *et al*., 2023] [Cooper, D. B . *et al*., 2023] [Saeed, M. A. M . *et al*., 2021]. The decision maker for the usage of contraception 57.6% was both the women and their husband, this might be contributed to empowering the women to make decision and share her opinion with her partner without fear and restrictions, on the other hand this could be due to that the choice of contraception method done according to husband preference like study contributed in Mali in 2022 done by Seidu, AA. *et al* and Sub Saharan Africa in 2022 done by Tesfa, D. *et al* [Alrawi, Y, 2021] [www.who.int] [Seidu, A. A . *et al*., 2022]. Several reasons have been known for not using contraceptives some of them was fear of side effect, husband disapproval, availability, health concern and others in this study the high percent was due to fear of side effects like the study about Reasons for nonuse of contraceptive methods by women with demand for contraception not satisfied in low and middle-income countries in 2019 done by Moreira, L.R *et al* [2019]. From this study the reasons for not using contraception the higher percent 25% was

fear of side effect, then due to husband/others disapproval 21%, health concern 10.7% and decrease breast milk 10.7%, so the education about each type of contraception method, explaining its side effect in correct manner according to the educational level and health condition of the women and involved her husband in this, would help her to choose the appropriate method and may lead to decrease the unmet need for FP as studies conducted at Ghana 2020 done by Schrumpf LA *et al* and in Nigeria 2020 done by Olaide, *et al* [Moreira, L. R . *et al*., 2019] [Schrumpf, L. A. *et al*., 2020. *et al*., 2020][Machiyama, K . *et al*., 2017][Adjiwanou, V . *et al*., 2022].

STRENGTH AND LIMITATIONS:

STRENGTHS:
➤ The strength for our study it was used DHS validated instruments and appraisals of its datasets with well-designed procedure and well tested questionnaire for data collection and measuring by algorithm revising for unmet need for family planning.
➤ As far as we know this research is the first that was conducted in AL-Najaf city.

LIMITATIONS:

The limitations were:
❖ the unmet need might be affected by social desirability.
❖ the causal relationship could not establish in cross-sectional studies.
❖ its involved the participants were from the center of the city with little number from nearby rural regions.

CONCLUSION:

1. In this study the prevalence of unmet need for family planning was high (14%) among women in Al-Najaf City.
2. The unmet need for family planning was high among women with low education level, low partner's education level and women having more female children.
3. The most common reason for not use contraception was fear from side effect.

RECOMMENDATIONS:

1. The education, counseling and health awareness must be intensified about the importance of spacing out the pregnancies.
2. The counseling about the correct use of contraceptives that appropriate to each woman in constant to her economic and general health condition this can be performed by increase

training of health care provider in health institutions for this topic.
3. Emphasized the husband involvement in the discussion of choosing a suitable family planning methods.

REFERENCES:

1. Alrawi, Y. "Exploring barriers to family planning service utilization and uptake among women in Iraq." *Eastern Mediterranean Health Journal, 27*.8 (2021): 818-825.
2. Komasawa, M., Yuasa, M., Shirayama, Y., Sato, M., Komasawa, Y., *et al*. "Demand for family planning satisfied with modern methods and its associated factors among married women of reproductive age in rural Jordan: a cross-sectional study." *PLoS One, 15*.3 (2020): e0230421.
3. Asmamaw, D. B. & Negash, W. D. "Magnitude of unmet need for family planning and its predictors among reproductive age women in high fertility regions of Ethiopia: Evidence from Ethiopian Demographic and Health Survey." *BMC Women's Health, 22* (2022): 408.
4. Al-Mohaisen, S. & Bawazir, A. "Unmet need for postpartum family planning in Riyadh, Saudi Arabia: findings from a cross-sectional study." (2021).
5. Tadele, A., Abebaw, D. & Ali, R. "Predictors of unmet need for family planning among all women of reproductive age in Ethiopia." *Contraception and Reproductive Medicine, 4*.1 (2019): 1-9.
6. Khalil, S. N., ALzahrani, M. M. & Siddiqui, A. F. "Unmet need and demand for family planning among married women of Abha, Aseer Region in Saudi Arabia." *Middle East Fertility Society Journal, 23*.1 (2018): 31-36.
7. Letamo, G. & Navaneetham, K. "Levels, trends and reasons for unmet need for family planning among married women in Botswana: a cross-sectional study." *BMJ Open, 5* (2015): e006603.
8. Cahill, N., Sonneveldt, E., Stover, J., Weinberger, M., Williamson, J., Wei, C., *et al*. "Modern contraceptive use, unmet need, and demand satisfied among women of reproductive age who are married or in a union in the focus countries of the Family Planning 2020 initiative: a systematic analysis using the Family Planning Estimation Tool." *The Lancet, 391*.10123 (2018): 870-882.
9. Sharma, K. A., Zangmo, R., Kumari, A., Roy, K. K., Bharti, J., *et al*. "Family planning and

Ali, R. H and Hameed, H. G

Sarc. Jr. Med. Sur. vol-3, issue-6 (2024) pp-65-83

abortion services in COVID 19 pandemic." *Taiwanese Journal of Obstetrics and Gynecology, 59*.6 (2020): 808-811.

10. Perehudoff, K., Kibira, D., Wuyts, E., Pericas, C., Omwoha, J., van den Ham, H. A., *et al*. "A comparative human rights analysis of laws and policies for adolescent contraception in Uganda and Kenya." *Reproductive Health, 19*.1 (2022): 1-14.

11. Al-Azawi, H. K. & Altaha, M. A. "Unmet need for family planning in Iraq." *Iraqi Journal of Community Medicine, 29*.4 (2016): 201-207. https://www.iasj.net/iasj/search?query=au:%22Hamid%20K%20Al-Azawi%22

12. Temmerman, M. "Retracted: Family planning in COVID-19 times: access for all." *The Lancet Global Health, 9*.6 (2021): e728-e729.

13. Zan, L. M., Sauvain-Dugerdil, C. & Rossier, C. "Using modern contraception while wanting a child. What does contraceptive over-use mean for the human rights-based approach in Burkina Faso: Insights from PMA2020 data." (2023).

14. Axelson, S. M., Sealy, G. A. & Mcdonald-Mosley, R. E. "Reproductive well-being: a framework for expanding contraceptive access." *American Journal of Public Health, 112*.S5 (2022): S504-S507.

15. Andreeva, E. N., Sheremetyeva, E. V. & Prilepskaya, V. N. "National medical eligibility criteria for contraceptive use 2023: focus on women's reproductive health: A review." *Gynecology, 25*.2 (2023): 124-132.

16. Festin, M. P. R. "Overview of modern contraception." *Best Practice & Research Clinical Obstetrics & Gynaecology, 66* (2020): 4-14.

17. Woldeamanuel, B. T., Gessese, G. T., Demie, T. G., Handebo, S. & Biratu, T. D. "Women's education, contraception use, and high-risk fertility behavior: A cross-sectional analysis of the demographic and health survey in Ethiopia." *Frontiers in Global Women's Health, 4* (2023): 1071461.

18. Li, Z., Patton, G., Sabet, F., Zhou, Z., Subramanian, S. V. & Lu, C. "Contraceptive use in adolescent girls and adult women in low-and middle-income countries." *JAMA Network Open, 3*.2 (2020): e1921437-e1921437.

19. Ahinkorah, B. O. "Predictors of unmet need for contraception among adolescent girls and young women in selected high fertility countries in sub-Saharan Africa: a multilevel mixed effects analysis." *PLoS One, 15*.8 (2020): e0236352.

20. Jain, R. & Muralidhar, S. "Contraceptive methods: needs, options and utilization." *The Journal of Obstetrics and Gynecology of India, 61* (2011): 626-634.

21. Manet, H., Doucet, M.-H., Bangoura, C., Dioubaté, N., El Ayadi, A. M., Sidibé, S., *et al*. "Factors facilitating the use of contraceptive methods among urban adolescents and youth in Guinea: a qualitative study." *Reproductive Health, 20*.1 (2023): 1-13.

22. Mulugeta, S. S., Muluneh, M. W., Belay, A. T., Yalew, M. M. & Agegn, S. B. "Reason and associated factors for nonuse of contraceptives among Ethiopian rural married women: A multilevel mixed effect analysis." *SAGE Open Nursing, 9* (2023): 23779608221150599.

23. Takyi, A., Sato, M., Adjabeng, M. & Smith, C. "Factors that influence modern contraceptive use among women aged 35 to 49 years and their male partners in Gomoa West District, Ghana: a qualitative study." *Tropical Medicine and Health, 51* (2023): 40. https://doi.org/10.1186/s41182-023-00531-x.

24. Amoah, E. J., Hinneh, T. & Aklie, R. "Determinants and prevalence of modern contraceptive use among sexually active female youth in the Berekum East Municipality, Ghana." *PLoS One, 18*.6 (2023): e0286585.

25. Mahfouz, M. S., Elmahdy, M., Ryani, M. A., Abdelmola, A. O., Kariri, S. A. A., Alhazmi, H. Y. A., *et al*. "Contraceptive use and the associated factors among women of reproductive age in Jazan City, Saudi Arabia: a cross-sectional survey." *International Journal of Environmental Research and Public Health, 20*.1 (2023): 843.

26. Puri, M. C., Huber-Krum, S., Canning, D., Guo, M., Shah, I. H., *et al*. "Does family planning counseling reduce unmet need for modern contraception among postpartum women: Evidence from a stepped-wedge cluster randomized trial in Nepal." *PLoS One, 16*.3 (2021): e0249106.

27. Getaneh, T., Negesse, A., Dessie, G., Desta, M., Moltot, T., *et al*. "Predictors of unmet need for family planning in Ethiopia 2019: a systematic review and meta-analysis." *Archives of Public Health, 78* (2020): 1-11.

28. Karra, M., Maggio, D., Guo, M., Ngwira, B. & Canning, D. "The causal effect of a family planning intervention on women's

contraceptive use and birth spacing." *Proceedings of the National Academy of Sciences, 119*.22 (2022): e2200279119.

29. Hanley, G. E., Hutcheon, J. A., Kinniburgh, B. A. & Lee, L. "Interpregnancy interval and adverse pregnancy outcomes." *Obstetrics & Gynecology, 129*.3 (2017): 408-415.

30. Htay, Z. W., Kiriya, J., Sakamoto, J. L. & Jimba, M. "Association between women's empowerment and unmet family planning needs in low-and middle-income countries in Southeast Asia: a cross-sectional study." *Women's Reproductive Health* (2023): 1-16.

31. Kozuki, N., Lee, A. C. C., Silveira, M. F., Sania, A., Vogel, J. P., Adair, L., *et al*. "The associations of parity and maternal age with small-for-gestational-age, preterm, and neonatal and infant mortality: a meta-analysis." *BMC Public Health, 13* (2013): 1-10.

32. Hameed, W., Azmat, S. K., Ali, M., Sheikh, M. I., Abbas, G., Temmerman, M., *et al*. "Women's empowerment and contraceptive use: the role of independent versus couples' decision-making, from a lower middle-income country perspective." *PLoS One, 9*.8 (2014): e104633.

33. Efendi, F., Sebayang, S. K., Astutik, E., Reisenhofer, S. & McKenna, L. "Women's empowerment and contraceptive use: Recent evidence from ASEAN countries." *PLoS One, 18*.6 (2023): e0287442.

34. Asmamaw, D. B. & Negash, W. D. "Unmet need for family planning and associated factors among adolescent girls and young women in Ethiopia: a multilevel analysis of Ethiopian Demographic and Health Survey." *Contraception and Reproductive Medicine, 8*.1 (2023): 13.

35. Patrikar, S. R., Basannar, D. R. & Sharma, M. S. "Women empowerment and use of contraception." *Medical Journal Armed Forces India, 70*.3 (2014): 253-256.

36. Dehlendorf, C., Krajewski, C. & Borrero, S. "Contraceptive counseling: best practices to ensure quality communication and enable effective contraceptive use." *Clinical Obstetrics and Gynecology, 57*.4 (2014): 659.

37. Moreira, L. R., Ewerling, F., Barros, A. J. D., Silveira, M. F., *et al*. "Reasons for nonuse of contraceptive methods by women with demand for contraception not satisfied: an assessment of low and middle-income countries using demographic and health

surveys." *Reproductive Health, 16* (2019): 1-15.

38. Almeen, M. I. & AL-Ayoubi, L. D. "Unmet need for family planning among currently married women in Baghdad Al Karkh." *Iraqi Journal of Community Medicine, 29*.4 (2016): 223-229.

39. Garo, M. G., Abe, S. G., Girsha, W. D., Daka, D. W. "Unmet need for family planning and associated factors among currently married women of reproductive age in Bishoftu town, Eastern Ethiopia." *PLoS One, 16*.12 (2021): e0260972.

40. D'souza, P., *et al*. "Factors influencing contraception choice and use globally: a synthesis of systematic reviews." *The European Journal of Contraception & Reproductive Health Care, 27*.5 (2022): 364-372.

41. WHO Family planning/contraception methods. https://www.who.int/news-room/fact-sheets/detail/family-planning-contraception 2023

42. United Nations. World Family Planning 2020 Highlights. https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/files/documents/2020/Sep/unpd_world_family_planning_2020_10_key_messages.pdf. Massage no.1

43. UN, DESA. Model-based Estimates and Projections of Family Planning Indicators 2016. (Online). United Nations, Department of Economic and Social Affairs,Population,Division,Updated2016.Available,at http://www.un.org/en/development/desa/population/theme/familyplanning/ cp_model.shtml (Accessed November 12th, 2016

44. United Nations. World Family Planning 2020 Highlights. https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/files/documents/2020/Sep/unpd_world_family_planning_2020_10_key_messages.pdf. Massage no.3

45. Agha, S. Y. & Rasheed, B. O. "Family planning and unmet need among Iraqi Kurds." *EMHJ-Eastern Mediterranean Health Journal, 13*(6), 1382-1391 (2007).

46. Al-Jawadi, A. A. & Al-Bakry, D. H. "Family planning unmet need profile in Mosul City, north of Iraq: a cross-sectional study." *Duhok Medical Journal, 4*.1 (2010).

Ali, R. H and Hameed, H. G

Sarc. Jr. Med. Sur. vol-3, issue-6 (2024) pp-65-83

47. https://www.un.org/en/development/desa/population/publications/dataset/contraception/wcu2014/Metadata/WCU2014_UNMET_NEED_metadata.pdf

48. [USAID. Demographic and Health Surveys Methodology - Questionnaires: Household, Woman's, and Man's. Measure DHS Phase III, 2011. Available at http://www.measuredhs.com/publications/publication-DHSQ6-DHSQuestionnairesand-Manuals.cfm (Accessed August 4th, 2015)

49. Bradley, S. E., Croft, T. N., Fishel, D. J. & Westoff, C. F. "Revising unmet need for family planning." DHS Analytical Studies No. 25. Calverton, Maryland, USA: ICF International, 2012. [50] UN, DESA. World Contraceptive Use 2014. United Nations, Department of Economic,and,Social,Affairs,PopulationDivision,2014.Available,at http://www.un.org/en/development/desa/population/publications/dataset/contraception/wcu2014/Metadata/WCU2014_UNMET_NEED_metadata.pdf (Accessed November 12th, 2016)

50. Hardee, Karen; Jordan, Sandra. Advancing rights-based family planning from 2020 to 2030. Open access journal of contraception, 2021, 157-171.

51. https://www.who.int/data/gho/indicator-metadata-registry/imr-details/3414

52. UNICEF: A Great Case Study in Women's Health Release Peace: the magazine Analysis & Background Stories on International Affairs. https://releasepeace.org/unicef-a-great-case-study-in-womens-health/

53. Coulson, J., Sharma, V. & Wen, H. "Understanding the global dynamics of continuing unmet need for family planning and unintended pregnancy." *China Popul. Dev. Stud. 7*, 1–14 (2023).

54. Narjis, A.-H. A. & Mahmoud, R. A. "The Medical Journal of Basrah University, 33*(1), 51-61 (2015).

55. https://www.iasj.net/iasj/search?query=au:%22Narjis%20A-H%20Ajeel1%20and%20Rajaa%20A.%20Mahmoud2%22

56. Ökem, Z. G. & Pekkurnaz, D. "Determinants of unmet need for family planning: Evidence from the 2018 Turkey Demographic and Health Survey." *Journal of Biosocial Science, 1-14* (2023).

57. Li, Y.-Y., Che, Y., Zhou, Y.-Z., Cheng, T.-Y., Dong, X.-J., Hu, X.-Y., Huang, X.-C., Jang, L., Jiang, L.-F., Luo, Y.-F., Lv, W., Qiao, G.-L., Song, J.-D., Wang, J.-M., Xa, W., Yuan, D., Zhang, L.-A., Zhou, Y.-F. & the PPC Study Group. "Unmet need for postpartum family planning and influencing factors in China." *China Population and Development Studies, 7*.1 (2023): 48-62.

58. Obeagu, E. I. & Bunu, U. O. "Factors that influence unmet need for family planning." *International Journal of Current Research in Biology and Medicine, 8*.1 (2023): 23-27.

59. Asif, M. F. & Pervaiz, Z. "Socio-demographic determinants of unmet need for family planning among married women in Pakistan." *BMC Public Health, 19*.1 (2019): 1-8.

60. Wulifan, J. K., Brenner, S., Jahn, A. & De Allegri, M. "A scoping review on determinants of unmet need for family planning among women of reproductive age in low and middle-income countries." *BMC Women's Health, 16*(2015): 1-15.

61. Data world bank. Unmet need for contraception (% of married women ages 15-49). https://genderdata.worldbank.org/indicators/sp-uwt-tfrt/

62. Abdelsalam, S. A., El-Sayed, S. E., Khafagy, M. A. & Alemam, D. S. "Unmet Need for Family Planning among Married Women of Reproductive Age in an Egyptian Village." *Egyptian Journal of Community Medicine, 39*.4 (2021).

63. Sensoy, N., Korkut, Y., Akturan, S., Yilmaz, M., Tuz, C. & Tuncel, B. "Factors affecting the attitudes of women toward family planning." *Family Planning, 13*(2018): 33.

64. Solomon, T., Nigatu, M., Gebrehiwot, T. T. & Getachew, B. "Unmet need for family planning and associated factors among currently married reproductive age women in Tiro Afeta District, South West Ethiopia, 2017: cross-sectional study." *BMC Women's Health, 19*(2019): 1-9.

65. Amaje, E. & Ayalew, T. "Unmet need for family planning and associated factors, among women of child-bearing age working in Hawassa industrial park, Southern Ethiopia 2021: An institution based cross-sectional study." *Clinical Epidemiology and Global Health, 17*(2022): 101122.

66. Hoq, M. N. "Influence of the preference for sons on contraceptive use in Bangladesh: A multivariate analysis." *Heliyon, 6*(10) (2020).

67. Aksan, A.-M. "Son preference and the fertility squeeze in India." *Journal of Demographic Economics, 87*.1 (2021): 67-106.

68. Singh, J. K., Singh, G. P. & Singh, S. K. "Son preference and children sex composition in Uttar Pradesh: An empirical analysis." *The Scientific Temper, 14*.03 (2023): 649-658.

69. Mbachu, C. O., Agu, I. C., Obayi, C., Eze, I., Ezumah, N. & Onwujekwe, O. "Beliefs and misconceptions about contraception and condom use among adolescents in south-east Nigeria." *Reproductive Health, 18*(2021): 1-8.

70. Alsaleem, M. A., Khalil, S. N., Siddiqui, A. F., Alzahrani, M. M. & Alsaleem, S. A. "Contraceptive use as limiters and spacers among women of reproductive age in southwestern, Saudi Arabia." *Saudi Medical Journal, 39*.11 (2018): 1109.

71. Abdel-Salam, D. M., Albahlol, I. A., Almusayyab, R. B., Alruwaili, N. F., Aljared, M. Y., Alruwaili, M. S. & Alnasser, R. M. "Prevalence, correlates, and barriers of contraceptive use among women attending primary health centers in Aljouf Region, Saudi Arabia." *International Journal of Environmental Research and Public Health, 17*.10 (2020): 3552.

72. Alsharif, S. S., Abu Saeed, R. I., Alskhairi, R. F., Almuwallad, S. A., Mandili, F. A. & Shatla, M. "Knowledge, Attitude, and Practice of Contraception Use Among Childbearing Women in Makkah Region, Saudi Arabia." *Cureus*, 15(2), e34848.

73. Cooper, D. B., Patel, P. & Mahdy, H. "Oral Contraceptive Pills." [Updated 2022 Nov 24]. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK430882/

74. Saeed, M. A. M., Salih, K., Al Shatair, S. A. E., Al- Khaledi, S. S. & Fadhil, S. A. "IRAQI JOURNAL OF COMMUNITY MEDICINE, 33*(2), 89-96 (2020).

75. Mbachu, C. O., Agu, I. C., Obayi, C., Eze, I., Ezumah, N. & Onwujekwe, O. "Beliefs and misconceptions about contraception and condom use among adolescents in south-east Nigeria." *Reproductive Health, 18*(2021): 7. doi: 10.1186/s12978-020-01062-y

76. Seidu, A. A., Ahinkorah, B. O., Armah-Ansah, E. K., Dadzie, L. K., Aboagye, R. G., Ameyaw, E. K. & Budu, E., *et al*. "Women's household decision-making power and contraceptive use in Mali." *Reproductive Health, 19*(2022): 232.

77. Tesfa, D., Tiruneh, S. A., Azanaw, M. M., Tesema, G. A., Boke, M. M. & Akalu, T. Y. "Determinants of contraceptive decision making among married women in Sub-Saharan Africa from the recent Demographic and Health Survey data." *BMC Women's Health, 22*(2022): 52.

78. Moreira, L. R., Ewerling, F., Barros, A. J. D. & Silveira, M. F. "Reasons for nonuse of contraceptive methods by women with demand for contraception not satisfied: an assessment of low and middle-income countries using demographic and health surveys." *Reproductive Health, 16*(2019): 148.

79. Schrumpf, L. A., Stephens, M. J., Nsarko, N. E., Akosah, E., Baumgartner, J. N., Ohemeng-Dapaah, S. & Watt, M. H. "Side effect concerns and their impact on women's uptake of modern family planning methods in rural Ghana: a mixed methods study." *BMC Women's Health, 20*(2020): 57.

80. Machiyama, K., Casterline, J. B., Mumah, J. N., Huda, F. A., Obare, F., Odwe, G., Kabiru, C. W., *et al*. "Reasons for unmet need for family planning, with attention to the measurement of fertility preferences: protocol for a multi-site cohort study." *Reproductive Health, 14*(2017): 23.

81. Adjiwanou, V., Bougma, M. & LeGrand, T. "The effect of partners' education on women's reproductive and maternal health in developing countries." *Social Science & Medicine, 197*(2018): 104-115.

82. Olaide, A., Oluwagbemiga, A., Bolajoko, A. & Kolawole, O. "Men's Involvement in Contraceptives Use and Wellbeing of Women in Nigeria: Implications for FP2020." *SAGE Open,* 12.3 (2022).

83. Khan, G. R., Baten, A. & Azad, M. A. K. "Influence of contraceptive use and other socio-demographic factors on under-five child mortality in Bangladesh: semi-parametric and parametric approaches." *Contraception and Reproductive Medicine, 8*.1 (2023): 22.

84. Introduction to basic epidemiology and principles of statistics for tropical diseases control. Geneva, Health Organization World, (2002).

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