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Prevalence Of Unintended Pregnancies and Associated Factors Amongst Women Attending the Antenatal Clinics of Primary Health Care Centers In Jeddah, Saudi Arabia: A Cross-Sectional Study

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Abstract
Background: Unintended pregnancy can have a significant negative impact on women's well-being and infant health, often leading to increased anxiety and stress.
Objective: This survey aimed to determine the frequency of unintended pregnancies and identify the connection between socio-demographic factors and pregnancy intentions.
Methods: A cross-sectional study was conducted on 345 pregnant women attending four primary healthcare centers in Jeddah, Saudi Arabia. The survey delved into the participants' pregnancy intentions, their emotional responses upon learning about the pregnancy, and the factors influencing their decision to conceive. Statistical analyses, including the chi-square test, were utilized to assess the relationship between socio-demographic variables and outcomes such as pregnancy intentions and desired family size.
Results: The survey revealed that 49.8% of the pregnancies were unintended, and 59.5% of the women had previously used a family planning method. Notably, 16.0% reported becoming pregnant due to a failure of their chosen family planning method. The study identified that women with only primary school education were more likely to have unintended pregnancies (p=0.04), as were those who were unaware of their ovulation days (p=0.04).
Conclusion: The findings revealed a significant proportion of unplanned pregnancies. Healthcare authorities must develop comprehensive family planning and reproductive health awareness programs to emphasize the importance of birth control.

Keywords: Unintended pregnancy; Factors; Survey, Contraception; Family planning; Birth control

Introduction

Unintended pregnancy can result in significant health risks and adverse effects for both women and their children. There are 208 million pregnancies globally each year, with 46% classified as unintended [1]. However, rates vary by geography and sociodemographic groups [1]. A recent World Health Organization (WHO) study across 36 countries shows that one in four pregnancies is unintended. It has been observed that two-thirds of sexually active women underestimate the likelihood of conception and discontinue contraception due to side effects or other health concerns [2]. This poses a significant public health concern. It has been found that more than seventy million women in economically weaker countries experience unintended pregnancies every year [3, 4]. These unintended pregnancies often result in 25 million unsafe abortions and about 47,000 maternal deaths annually [2, 5, 6]. Unintended pregnancies are either undesired or mistimed, occurring earlier than desired. In contrast, intended pregnancies occur at or after the desired time[7]. Studies have indicated that over 50% of pregnancies in Saudi Arabia are unintended, underscoring the potential impact on the social and mental well-being of parents and children[8] [9].

It has been documented that women experiencing unintended pregnancies exhibit a propensity to defer prenatal care until after the first trimester and engage more frequently in alcohol and tobacco usage during gestation [12]. Also contributing to this problem, babies born from unintended pregnancies are more likely to experience violence and physical abuse. They may also be affected by family issues and have a history of sexual abuse, or psychological trauma during their mother's childhood [13]. The nature and timing of unintended pregnancies notably influence health outcomes, with women carrying to term unwanted pregnancies exhibiting higher tendencies towards smoking, receiving delayed prenatal care, and giving birth to low birth-weight infants when contrasted with those experiencing mistimed pregnancies [14]. Unintended pregnancies have been linked to postpartum depression [15] and affect not only couples who have achieved their desired family size but also younger women.

In many Middle Eastern countries, discussions about reproductive health are not as prevalent due to social taboos, cultural norms, and religious traditions. Sexual education is not consistently included in the curriculum, leading to a lack of awareness that

hinders informed decision-making regarding family planning, particularly among women [18]. Consequently, unintended pregnancies have increased, with approximately one in ten pregnancies resulting in abortion in these nations. In Saudi Arabia, abortion is generally prohibited, with a few exceptions for cases related to preserving the physical health of the woman [19]. Despite the legal limitations, self-induced abortions using misoprostol have been reported among Saudi women.

The interplay of cultural, religious, and social factors governing pregnancy intentions among married couples necessitates an investigation into the frequency of unintended pregnancies among women in Middle Eastern society. This study seeks to determine the prevalence of unintended pregnancies among pregnant women attending antenatal clinics at four primary healthcare centers in Jeddah, Saudi Arabia. Additionally, it aimed to identify the relationship between socio-demographic factors and pregnancy intentions. Understanding these dynamics is essential for health authorities to comprehend the reproductive health and fertility-related behaviors of married couples. This knowledge can aid healthcare providers in developing tailored family planning programs that respect the religious and cultural beliefs of couples while educating them about preventing unintended pregnancies.

Materials and Methods

This analytical cross-sectional study was conducted at the antenatal clinics of primary health care centers in Jeddah, Saudi Arabia, and sought to determine the prevalence of unintended pregnancies and identify the determinants of pregnancy intentions among pregnant women attending these clinics. Eligible participants who were currently pregnant at the time of the study, excluding those with chronic diseases requiring regular medication (e.g., hypertension, diabetes, arthritis), were recruited during routine visits, provided they consented to participate in the research. The sample size determination, guided by the World Health Organization's (WHO) Health Sciences Sample Size Determination software, was predicated on a 53.4% frequency of unintended pregnancy as reported in prior Saudi research [8]. To achieve a 95% confidence level and a 5% precision level, an ideal sample size of 382 was computed. However, to account for a potential 20% non-participation rate, the study invited 458 women to partake in the survey.

The survey instrument, developed to capture socio-demographic data and identify pregnancy intentions and influencing factors, incorporated questions adapted from US-based population surveys on fertility behaviors and intentions [10]. To respect cultural sensitivities in the conservative Saudi society, the questionnaire was translated into Arabic, and the study methodology was meticulously planned to include ethical considerations approved by the Institutional Ethics Review Board. Participant privacy was paramount; interviews were conducted one-on-one in private spaces by a female research officer. Informed consent was obtained at the onset, with assurances of voluntary participation and confidentiality safeguarded by assigning unique identifiers rather than using names or other personal identifiers.

Data entry and analysis employed the Statistical Package for the Social Sciences (SPSS Inc., IBM, New York, USA), version 20. Analytical measures included calculation of means and standard deviations for quantitative variables, and frequencies and proportions for categorical variables. The statistical relationship between socio-demographic factors and outcomes such as pregnancy intentions and intended family size was examined using chi-square tests, with a p-value of less than 0.05 denoting statistical significance.

Results

The survey results indicate a diverse range of responses across several variables. Among the respondents, 36.5% did not answer their locality, while Abdulmaj (13.3%), Al Safa (5.5%), Al-Bawadi (14.5%), Breman (5.2%), KAUH (22.0%), and Al Bahra (2.9%) were the specified areas. Regarding nationality, 67.0% were Saudi, and 33.0% were non-Saudi. Education levels varied, with 8.8% having no formal education, 39.5% having completed primary school, 33.9% having secondary education, 7.1% being university graduates, 7.1% having post-graduate education, and 3.5% having other forms of education. Occupation-wise, (majority, i.e., above 90% or 95%) most of the studied women (76.1%) were housewives, while 23.8% were working women. Regarding their husbands' occupations, 9.8% were teachers, 3.7% were doctors, 1.7% were in business, 2.0% had office jobs, 54.6% were government employees, 15.6% had other occupations, and 12.5% were specified as having various other roles. The monthly household income varied, with 32.5% earning less than 5000 Saudi Riyals (SR), 31.0% earning between 5000 and 10000 SR, 19.7% earning between 10001 and 15000 SR, 8.1% earning between 15001 and 20000 SR, 4.8% earning between 20001 and 25000 SR, and 3.9% earning between 25001 and 30000 SR (**Table 1**).

Table 1. Demographic and socio-economic characteristics of survey respondents

Variables	Frequency* (n = 345)	Percentage (%)
Locality		
No answer	126	36.5
Abdulmaj	46	13.3
Al Safa	19	5.5
Al-Bawadi	50	14.5
Breman	18	5.2
KAUH	76	22.0
Al Bahra	10	2.9
Nationality		
Saudi	231	67.0
Non-Saudi	114	33.0
Education		
None	30	8.8
Primary School	134	39.5
Secondary Education	115	33.9
University Graduate	24	7.1
Post Graduate	24	7.1
Other	12	3.5
Occupation		
Housewives	252	76.1
Working women	79	23.8
Husband's occupation		
Teacher	29	9.8
Doctor	11	3.7
Business	5	1.7
Office Job	6	2.0
Government Employee	161	54.6
Other	46	15.6
Specified	37	12.5
Monthly income of household (Saudi riyals)		
< 5000 SR	109	32.5
5000 to ≤ 10000	104	31.0
10,001 to ≤15000	66	19.7
15001 to ≤ 20000	27	8.1
20001 to ≤ 25000	16	4.8
25001 to ≤ 30000 SR	13	3.9

* Some of the total may be <345 due to missing data.

The survey encompassed 345 female participants. The average age of these women was calculated to be 28.8 years (SD of ± 6.2 years). Participants reported an average marriage duration of 8.1 years (SD of ±6.7 years). The mean age at first pregnancy was pinpointed at 22.5 years (SD±4.5 years).

Notably, about 17% of the women had experienced a spontaneous abortion, averaging 2 incidents per woman; 9% had undergone an induced abortion, averaging 1 incident per woman. A significant 49.8% of the respondents revealed that their current pregnancy had not been planned, and 7.6% were uncertain about the planned status of their pregnancy. More than half of the surveyed individuals were pregnant with either their first or second child (**Table 2)**. The results also highlighted a trend where the incidence of unplanned pregnancies was directly related to the number of pregnancies; 36.6% indicated their first pregnancy was unplanned, while 48.1%, 51.5%, and 60.5% expressed the same for their second, third, and fourth pregnancy (**Table 2**).

Table 2. Pregnancy experiences of survey respondents

Variables	Frequency* (n = 345)	Percentage (%)
Have you ever had a miscarriage?		
Yes	97	29.3
No	234	70.7
Do you have children?		
Yes	276	83.4
No	55	16.6
Order of current pregnancy		
First	95	29.9
Second	87	27.4
Third and above	136	42.7
Was the current pregnancy planned?		
Yes	129	42.6
No	151	49.8
Not sure	23	7.6
First pregnancy		
Intended	198	60.9
Unintended	119	36.6
Not sure	8	2.5
Second pregnancy		
Intended	120	49.8
Unintended	116	48.1
Not sure	5	2.1
Third pregnancy		
Intended	71	42.5
Unintended	86	51.5
Not sure	10	6.0
Fourth pregnancy and more		
Intended	86	36.1
Unintended	144	60.5
Not sure	8	3.36

* Some of the total may be <345 due to missing data.

Over half (59.5%) of the women reported using a family planning method (**Table 3**). 16.0% of the respondents experienced an unplanned pregnancy due to a failure of a family planning method. Of 223 women asked about family size, 33.5% indicated that their family size was unplanned. Additionally, 39% of the women did not know of their fertile periods, while roughly 35% provided a correct response.

Table 3. Participants' Knowledge of Family Planning Practices*

Variables	Frequency (n = 345)	Percentage (%)
Have you ever used a family planning method?		
Yes	204	59.5
No	139	40.5
Have you ever had a pregnancy due to failure of a family planning method?		
Yes	41	16.0
No	216	84.0
Your family size is as intended /planned by you and your spouse		
Strongly agree	82	24.3
Agree	141	41.8
Disagree	113	33.5
Strongly disagree	1	0.3
Do you know the days of the menstrual cycle when the chances of becoming pregnant are high?		

First ten days after the first day of menstruation	50	14.9
Mid-cycle (day 10-20 from first day of menstruation)	117	34.9
Last 10 days before next menstruation (day 20 onwards from first day of menstruation)	38	11.3
Do not know	130	38.8

* Some of the total may be <345 due to missing data.

The study examined pre-pregnancy care practices and participants' emotional responses to pregnancy. The majority, i.e., above 90% or 95%, most of the studied women (75.7%) were aware of the benefits of folic acid before pregnancy; however, only 32.3% had used folic acid for at least three months before conception to prevent neural tube defects (**Table 4**). Regarding pre-pregnancy health consultations, 37.4% had visited a dentist, 20.7% had consulted a family doctor about their body mass index, and 37.8% had undergone periodic checkups to monitor hemoglobin levels and avoid anemia (**Table 4**). Perceptions of pregnancy timing revealed that 53.5% preferred to have become pregnant sooner, 26.8% wished for a delay, 12.0% were satisfied with the timing, and 7.7% did not want to be pregnant at that time or any future point. Upon the effect of discovering their pregnancy, 9.4% felt very unhappy, 6.7% unhappy, 15.2% uncertain, 38.0% happy, and 30.7% very happy. When evaluating the timing of pregnancy, 30.0% considered it too soon, 12.1% thought it was later than desired, 47.7% felt it was at the right time, and 10.2% were indifferent. Concerns about baby care were dominant, with 40.4% worried about insufficient knowledge, while 46.9% anticipated that having a baby would disrupt their routine (**Table 4**). Despite these concerns, 85.3% looked forward to caring for the baby, 89.7% anticipated new experiences, and 76.6% were excited to share their pregnancy news. Financial worries were noted, with 23.2% concerned about their ability to support a baby. Partners' feelings showed that 31.1% wanted the pregnancy to occur sooner, 16.5% preferred a later timing, 39.3% were content with the timing, and 6.1% did not want the pregnancy at all. Post-pregnancy care practices indicated that 68.8% used folic acid after learning about the pregnancy, and 30.1% visited a dentist (**Table 4**).

Table 4: Pre-pregnancy health care and feelings of the participants about becoming pregnant

Variables	**Frequency*** (n = 345)	**Percentage (%)**
Do you know the benefits of folic acid before pregnancy?		
Yes	259	75.7
No	83	24.3
Have you ever used folic acid for 3 months before becoming pregnant in order to prevent a neural tube defect?		
Yes	110	32.3
No	231	67.7
Have you ever visited a dentist before planning to get pregnant?		
Yes	126	37.4
No	211	62.6
Have you visited a family doctor to check your body mass index to avoid obesity before planning a pregnancy?		
Yes	70	20.7
No	268	79.3
Have you visited a family doctor for periodic checkup and to measure your hemoglobin level to avoid anemia during pregnancy before planning a pregnancy?		
Yes	128	37.8
No	211	62.2
Reflecting on the time just before you got your current pregnancy, how did you feel about becoming pregnant?		
wanted to be pregnant sooner	174	53.5
wanted to be pregnant later	87	26.8
wanted to be pregnant then	39	12.0
I did not want to be pregnant then or at any time in the future	25	7.7
I wanted to be pregnant after:		
1 year	13	26.0

2 years	12	24.0
3 years	9	18.0
4 years	7	14.0
5 years	8	16.0
6 years	1	2.0
How did you feel when you found out you were pregnant with your new baby? You were:		
Very unhappy to be pregnant	31	9.4
Unhappy to be pregnant	22	6.7
Not sure	50	15.2
Happy to be pregnant	125	38.0
Very happy to be pregnant	101	30.7
So would you say you became pregnant too soon, at about the right time, or later than you wanted?		
Too soon	97	30.0
Later	39	12.1
Right time	154	47.7
Did not care	33	10.2
I was worried that I did not know enough about baby care.		
Yes	133	40.4
No	196	59.6
I thought a new baby would keep me away from doing the things I used to do, like working, going to school, or going out.		
Yes	153	46.9
No	173	53.1
I looked forward to teaching and caring for a new baby.		
Yes	278	85.3
No	48	14.7
I looked forward to the new experiences that having a baby would bring.		
Yes	87	89.7
No	10	10.3
I looked forward to telling my friends that I was pregnant.		
Yes	252	76.6
No	77	23.4
I was worried that I did not have enough money to take care of a baby.		
Yes	76	23.2
No	252	76.8
Reflecting on the time just before you got your current pregnancy, how did your husband feel about your becoming pregnant?		
He wanted me to be pregnant sooner	102	31.1
He wanted me to be pregnant later	54	16.5
He wanted me to be pregnant then	129	39.3
He did not want me to be pregnant then or at any time in the future	20	6.1
I do not know	23	7.0
Have you ever used folic acid for 3 months after knowing you were pregnant?		
Yes	227	68.8
No	103	31.2
Have you visited a dentist after knowing you were pregnant?		
Yes	98	30.1
No	228	69.9

* Some of the total may be <345 due to missing data.

The survey results indicate that education level significantly influences pregnancy intention, with individuals lacking formal education showing a higher proportion of unintended pregnancies compared to those with higher levels of education (p= 0.040) **(Table 5)**. However, nationality, occupation, and monthly household income were insignificantly related to pregnancy intention (p >

0.05). Specifically, Saudi and non-Saudi respondents had similar pregnancy intentions (p= 0.221), housewives and working women showed no significant difference in pregnancy intention (p = 0.225), and the husband's occupation also did not significantly impact pregnancy intention (p = 0.230). Similarly, variations in household income did not substantially affect pregnancy intention (p = 0.211) **(Table 5)**.

Table 5. Relationship between participants' socio-demographic variables and pregnancy intention*

Variables	Intended Current Pregnancy	Unintended Current Pregnancy	P-value
Nationality			
Saudi	145	82	0.221
Non-Saudi	78	32	
Education			
None	21	7	0.040
Primary School	92	40	
Secondary Education	77	35	
University Graduate	13	10	
Post Graduate	12	12	
Other	4	8	
Occupation			
Housewives	157	88	0.225
Working women	58	20	
Occupation of husband			
Teacher	14	14	0.230
Doctor	9	2	
Business	3	3	
Office Job	6	0	
Government Employee	107	50	
Other	31	14	
Specified	25	11	
Monthly income of household			
< 5000 SR	67	37	0.211
5000 to ≤ 10000 SR	59	43	
10,001 to ≤15000 SR	48	18	
15001 to ≤ 20000 SR	20	6	
20001 to ≤ 25000 SR	12	4	
25001 to ≤ 30000 SR	10	3	

* The data are presented as frequency unless otherwise specified. Some frequencies may not add up to 345 due to missing data.

The survey also revealed that respondents' attitudes toward pregnancy and their knowledge of ovulatory cycles varied with pregnancy intention. No significant difference was found between having experienced a miscarriage and pregnancy intention (p=0.36), nor between planned versus unplanned pregnancies and pregnancy intention (p = 0.39) **(Table 6)**. Similarly, the use of family planning methods did not significantly affect pregnancy intention (p = 0.24), and the occurrence of pregnancy due to family planning method failure also showed no significant relationship (p = 0.26). However, knowledge of the ovulatory cycle had a significant impact, with those who knew the days of the ovulatory cycle when the chances of becoming pregnant are high showing a significant relation with pregnancy intention (p = 0.04) **(Table 6)**.

Table 6. Relationship between the respondents' attitudes and pregnancy intention*

Variables	Intended Current Pregnancy	Unintended Current Pregnancy	P-value
Have you ever had a miscarriage?			
Yes	60	35	0.360
No	159	72	
Was the current pregnancy planned?			
Yes	87	40	
No	94	54	0.390
Not sure	12	10	
Have you ever used a family planning method?			
Yes	136	62	0.241
No	85	52	
Have you ever had a pregnancy due to the failure of a family planning method?			
Yes	24	16	0.266
No	148	64	
Do you know the days of the ovulatory cycle when the chances of becoming pregnant are high?			
First ten days after the first day of menstruation	32	15	
Mid-cycle (day 10-20 from the first day of menstruation)	87	28	0.040
Last 10 days before next menstruation (day 20 onwards from the first day of menstruation)	27	11	
Do not know	75	53	

* The data are presented as frequency unless otherwise specified. Some frequencies may not add up to 345 due to missing data.

Discussion

Unintended pregnancy is a prevalent global concern in many countries. Various factors are linked to unintended pregnancies, which have been found to have a significant impact on both maternal and infant health outcomes. Unplanned pregnancy is a significant contributor to maternal mortality and morbidity globally. A systematic review analyzed the prevalence and determinants of unintended pregnancies in developing countries, and the findings revealed an average prevalence of unintended pregnancy at 35%, with rates ranging from 13% to 82% [21]. Key determinants identified include socio-demographic factors such as women's age, education, parity, birth order, previous pregnancy intention, age at marriage, socioeconomic status, marital status, religion, caste, and ethnicity.

A study in Malaysia revealed that unplanned pregnancy had a prevalence of 42.9% among postpartum women. Older mothers, Muslim women, those with low household income, and those with a history of emotional and intimate partner violence were found to have higher odds of experiencing unplanned pregnancies, highlighting the need for targeted family planning interventions for these at-risk groups [23]. Another study in Chiang Mai, Thailand, found that 65.2% of pregnancies among women aged 15-24 were unintended. These unintended pregnancies were more common among students, women aged 20 or younger, and those with partners of similar age, often due to barriers like lack of time for contraception, fear of parents finding out, and embarrassment [24].Unintended pregnancy in Ghana has a prevalence of 40%, with significant predictors including age, education, marital status, parity, region of residence, and unmet need for contraception [25]. In sub-Saharan Africa, 74.1% of pregnancies are planned, while 25.9% are either mistimed or unwanted, with sexual violence significantly increasing the risk of mistimed and unwanted pregnancies. Women with a history of sexual violence, those aged 40-49, and cohabiting women are at higher risk, underscoring the need for targeted interventions to address and reduce these pregnancies [26]. A study aimed to determine the overall prevalence of unintended pregnancy and its determinants in Ethiopia found that maternal education, age, and household wealth index are strongly associated with unintended pregnancy [27].Unintended pregnancy, affecting over half of postpartum women in Brazil, is significantly associated with various sociodemographic factors and adverse obstetric outcomes. Major predictors include being under 20, having brown or yellow skin color, lacking a partner or paid job, alcohol abuse, and having three or more births, with prior neonatal death being a protective factor against both mistimed and unwanted pregnancies [28]. In Yamagata, Japan, 46.2% of surveyed women aged 35-49 experienced unintended pregnancies, with

significant associations found with having an older husband, early sexual activity, and teenage marriage [29]. In a study of 41,689 women across six South Asian countries, 19.1% reported unintended pregnancies, with rates varying from 11.9% in India to 28.4% in Bangladesh. The prevalence was 23.4% in Pakistan, 22.3% in Nepal, 17.8% in Afghanistan, and 15.6% in the Maldives. Factors associated with unintended pregnancies included younger age, lower socioeconomic status, urban residence, fewer children, smaller family size, and intent to use contraception [3]. Similarly, in rural Bangladesh, it was revealed that 29% of pregnancies among women were unintended, with a higher frequency among older, less educated, multiparous, and underprivileged women [20]. Findings from a survey of 3,300 women across 22 sub-districts indicated that 29% of pregnancies were unintended. It was observed that unintended pregnancies were more prevalent among older women, individuals with lower education levels, those with higher parity, and women from economically disadvantaged backgrounds. Moreover, the rate of unintended pregnancy was higher (33%) among women who had used contraceptives before their last pregnancy, compared to 23% among those who had not.

The overall frequency of unintended pregnancies in the current study was 49.8%. Unfortunately, there are no enough data from other regions in Saudi Arabia to compare the prevalence rates of unintended pregnancy. A study on a sample of 99 Saudi post-partum women aged over 17 years at two hospitals in Riyadh reported the frequency of unwanted pregnancy to be 53.4% [8]. In another study, notably, women in Saudi Arabia had a high prevalence of unintended pregnancies (53%) [9]. Data from neighboring Arab countries that share similar cultural and religious norms show a high prevalence of unintended pregnancy: Yemen (58%), Palestine (39%), Syria (31%), and Lebanon (29%).

Our findings also supported the view that women with lower educational attainment may be more likely to have an unintended pregnancy [30, 31]. Moreover, several authors have reported that a woman's educational status was a major predictor of unintended pregnancy [30, 32, 33]. Women with a higher level of education likely have greater awareness about current family planning methods and their proper use. One issue of concern in the current study is that many of the respondents could not determine ovulation. Furthermore, the likelihood of unintended pregnancy was significantly higher in women who did not know when the chances of becoming pregnant were high in their menstrual cycle. This finding is not surprising in our community, where issues relating to reproduction and sexuality are generally not openly discussed due to cultural and social norms. Sexual healthcare services in Saudi Arabia are limited, possibly due to local customs, and there is poor integration of sexual health education and reproductive health [34].

Consequently, many women do not completely understand the functioning of the reproductive system, thereby resulting in an improper assessment of the tangible pregnancy risk, either desired or undesired. The less knowledge combined with cultural malaise among health care providers, who tend to dodge opening discussions on sexual affairs in their routine clinical practices, possibly to respect cultural customs and also to avoid offending their patients. More than half (59.5%) of the studied respondents reported ever using a family planning method, with 16.0% reporting pregnancy due to failure of the family planning method. Approximately 9% of respondents admitted to having an induced abortion. While several studies, including those conducted in countries where abortion is legally prohibited, have reported that many unplanned pregnancies are expected to be ended by clandestine and usually insecure procedures, abortion was not addressed in detail in our report, as it is an illegal and sensitive issue [9, 30, 33, 35, 36]. As per survey data, most pregnancies in the studied sample were unplanned. We believe that healthcare authorities need to design family planning and reproductive health awareness programs to raise awareness among families regarding the importance of achieving the desired family size. Through such efforts, the importance of families' reproductive and general health and well-being can be emphasized. Although increasing access to contraception is essential, it may not sufficiently address the problem of unintended pregnancy among women in our setting. It may thus be important to clarify the duties and responsibilities of primary health care practitioners and give them adequate training in reproductive healthcare practice to solve this public health challenge. Healthcare administrators might also need to establish culturally appropriate health guidelines to prevent unintended pregnancy, which can be implemented in the primary healthcare setting. Furthermore, healthcare professionals should be able to detect women who are at risk of having unintentional pregnancies, like those with lower educational attainment and those with large families, to provide patient-centered counseling.

Conclusions

In conclusion, this study highlights a significant occurrence of unintended pregnancies among women visiting antenatal clinics in Jeddah, Saudi Arabia. The research underlines that factors such as lower educational attainment and a lack of knowledge about birth control methods play a crucial role in this context. It emphasizes the need for healthcare authorities to initiate and enhance family

planning and reproductive health awareness programs, aiming to equip families with the necessary information to make informed decisions regarding birth control and ultimately achieve their desired family size.

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Conflicts of Interest: The author has none to declare.

Authors' Contributions
It is a single-author paper, and the author performed all the tasks.

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Data availability statement:
The generated and/or analyzed data of the undertaken study are included within the manuscript. The patients' data are not publicly available to protect individual privacy. However, additional information on the current study may be obtained from the corresponding author upon request (mmurad@kau.edu.sa).

References

1. Aragaw, F.M., et al., *Magnitude of unintended pregnancy and its determinants among childbearing age women in low and middle-income countries: evidence from 61 low and middle income countries.* Front Reprod Health, 2023. **5**: p. 1113926.
2. Ameyaw, E.K., et al., *Prevalence and determinants of unintended pregnancy in sub-Saharan Africa: A multi-country analysis of demographic and health surveys.* PLoS One, 2019. **14**(8): p. e0220970.
3. Sarder, A., et al., *Prevalence of unintended pregnancy and its associated factors: Evidence from six south Asian countries.* PLoS One, 2021. **16**(2): p. e0245923.
4. Ampt, F.H., et al., *Incidence of unintended pregnancy among female sex workers in low-income and middle-income countries: a systematic review and meta-analysis.* BMJ Open, 2018. **8**(9): p. e021779.
5. Singh, S., G. Sedgh, and R. Hussain, *Unintended pregnancy: worldwide levels, trends, and outcomes.* Stud Fam Plann, 2010. **41**(4): p. 241-50.
6. Bearak, J., et al., *Global, regional, and subregional trends in unintended pregnancy and its outcomes from 1990 to 2014: estimates from a Bayesian hierarchical model.* Lancet Glob Health, 2018. **6**(4): p. e380-e389.
7. Finer, L.B. and M.R. Zolna, *Shifts in intended and unintended pregnancies in the United States, 2001-2008.* Am J Public Health, 2014. **104 Suppl 1**(Suppl 1): p. S43-8.
8. Soliman Aziza Tosson, A.S.B., AlHaziem Sara, Almoutary Hesa, *Reproductive health and neonatal consequences of unintended childbearing among Saudi women.* Journal of Nursing Education and Practice, 2015. **5**.
9. Almaghaslah, E., R. Rochat, and G. Farhat, *Validation of a pregnancy planning measure for Arabic-speaking women.* PLoS One, 2017. **12**(10): p. e0185433.
10. Santelli, J., et al., *The measurement and meaning of unintended pregnancy.* Perspect Sex Reprod Health, 2003. **35**(2): p. 94-101.
11. Kost, K. and L. Lindberg, *Pregnancy Intentions, Maternal Behaviors, and Infant Health: Investigating Relationships With New Measures and Propensity Score Analysis.* Demography, 2015. **52**(1): p. 83-111.
12. Altfeld, S., et al., *Wantedness of pregnancy and prenatal health behaviors.* Women Health, 1997. **26**(4): p. 29-43.
13. Gazmararian, J.A., et al., *The relationship between pregnancy intendedness and physical violence in mothers of newborns. The PRAMS Working Group.* Obstet Gynecol, 1995. **85**(6): p. 1031-8.
14. D'Angelo, D.V., et al., *Differences Between Mistimed and Unwanted Pregnancies Among Women Who Have Live Births.* 2004. **36**(5): p. 192-197.
15. Alasoom, L.I. and M.R. Koura, *Predictors of postpartum depression in the eastern province capital of saudi arabia.* J Family Med Prim Care, 2014. **3**(2): p. 146-50.
16. Daulaire, N., et al. *Promises to keep. The toll of unintended pregnancies on womens lives in the developing world*. 2002.
17. Yokoe, R., et al., *Unsafe abortion and abortion-related death among 1.8 million women in India.* BMJ Glob Health, 2019. **4**(3): p. e001491.
18. Hessini, L., *Abortion and Islam: policies and practice in the Middle East and North Africa.* Reprod Health Matters, 2007. **15**(29): p. 75-84.

19. Alsibiani, S.A., *Use of misoprostol for self-induced medical abortions among Saudi women: a call for attention.* Gynecol Obstet Invest, 2014. **78**(2): p. 88-93.
20. Noor, F.R., et al., *Unintended pregnancy among rural women in Bangladesh.* Int Q Community Health Educ, 2011. **32**(2): p. 101-13.
21. Sumera Aziz Ali, S.S.T., Waris Qidwai *Prevalence and Determinants of Unintended Pregnancy : Systematic Review.* World Family Medicine Journal/Middle East Journal of Family Medicine 2016. **14**: p. 37-46.
22. Nelson, H.D., et al., *Associations of Unintended Pregnancy With Maternal and Infant Health Outcomes: A Systematic Review and Meta-analysis.* JAMA, 2022. **328**(17): p. 1714-1729.
23. Yusof M, S.A., Omar M, *Unplanned Pregnancy and Its Associated Factors.* Global Journal of Health Science, 2018. **10**.
24. Sriprasert, I., et al., *Unintended pregnancy and associated risk factors among young pregnant women.* 2015. **128**(3): p. 228-231.
25. Nyarko, S.H., *Unintended Pregnancy among Pregnant Women in Ghana: Prevalence and Predictors.* 2019. **2019**(1): p. 2920491.
26. Ahinkorah, B.O., et al., *Effect of sexual violence on planned, mistimed and unwanted pregnancies among women of reproductive age in sub-Saharan Africa: A multi-country analysis of Demographic and Health Surveys.* SSM - Population Health, 2020. **11**: p. 100601.
27. Alene, M., et al., *Prevalence and determinants of unintended pregnancy in Ethiopia: A systematic review and meta-analysis of observational studies.* PLoS One, 2020. **15**(4): p. e0231012.
28. Theme-Filha, M.M., et al., *Factors associated with unintended pregnancy in Brazil: cross-sectional results from the Birth in Brazil National Survey, 2011/2012.* Reproductive Health, 2016. **13**(3): p. 118.
29. Goto, A., et al., *Factors associated with unintended pregnancy in Yamagata, Japan.* Social Science & Medicine, 2002. **54**(7): p. 1065-1079.
30. Lamina, M.A., *Prevalence and Determinants of Unintended Pregnancy Among Women in South-Western Nigeria.* Ghana Med J, 2015. **49**(3): p. 187-94.
31. Yazdkhasti, M., et al., *Unintended Pregnancy and Its Adverse Social and Economic Consequences on Health System: A Narrative Review Article.* Iran J Public Health, 2015. **44**(1): p. 12-21.
32. Nigatu Regassa Geda, T.K.L., *Unintended pregnancy among married women in Damot Gale District, Southern Ethiopia: Examining the prevalence and risk factors.* African Population Studies, 2012. **26**.
33. Dutta, M., C. Shekhar, and L. Prashad, *Level, Trend and Correlates of Mistimed and Unwanted Pregnancies among Currently Pregnant Ever Married Women in India.* PLOS ONE, 2015. **10**(12): p. e0144400.
34. Al-Amoudi, S.M., *Health empowerment and health rights in Saudi Arabia.* Saudi Med J, 2017. **38**(8): p. 785-787.
35. Erfani, A., *Levels, trends, and determinants of unintended pregnancy in iran: the role of contraceptive failures.* Stud Fam Plann, 2013. **44**(3): p. 299-317.
36. Jones, R.K. and M.L. Kavanaugh, *Changes in abortion rates between 2000 and 2008 and lifetime incidence of abortion.* Obstet Gynecol, 2011. **117**(6): p. 1358-1366.