THE EFFECT OF UNINTENDED PREGNANCY ON MATERNAL AND NEONATAL OUTCOMES IN TERTIARY CARE HOSPITALS OF RAWALPINDI & ISLAMABAD: AN ANALYTICAL CROSS-SECTIONAL STUDY

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ABSTRACT
Background: Unintended pregnancies have been linked to adverse maternal and neonatal health outcomes, posing significant challenges to healthcare systems worldwide. This study aims to fill this knowledge gap by investigating the association between unintended pregnancy and various health indicators among expectant women.
Methods: This analytical cross-sectional study recruited postpartum women from three tertiary care hospitals in Rawalpindi and Islamabad, Pakistan, using convenience sampling. Inclusion criteria covered women in the postpartum period within five days, who delivered in specified hospitals, and of any age. Exclusion criteria excluded women with certain medical conditions, multiple pregnancies, or incomplete records. A total of 400 participants were planned for data collection using a structured questionnaire to assess pregnancy intention with the LMUP scale and gather maternal and neonatal outcomes data. Statistical analysis involved SPSS version 26, with descriptive statistics and Chi-square tests for comparison. Ethical approval and consent were obtained for the study.
Results: The study included 400 women with an average gestational age of 27 weeks. Of these, 162 (40.5%) reported unintended pregnancies, while 238 (59.5%) reported intended pregnancies. Only 69 (17%) of women reported actual contraceptive use, with low utilization rates for methods like oral contraceptives and condoms. Pregnancy intention was significantly associated with various maternal and neonatal health outcomes, including fetal distress, postpartum complications, prematurity, and neonatal resuscitation (p<0.05), emphasizing the impact of pregnancy planning on health outcomes.
Conclusion: Unintended pregnancies were associated with a range of adverse outcomes, including lower rates of prenatal care utilization, inadequate nutrition, increased risk of complications, and suboptimal birth outcomes. These findings stress the importance of tailored interventions to mitigate risks associated with unintended pregnancies, ultimately aiming to enhance the overall well-being of mothers and infants.

INTRODUCTION

Unintended pregnancy poses a significant public health challenge, characterized by pregnancies that are mistimed, unexpected, or undesired at conception. Its consequences reverberate across multiple societal issues, including family well-being, human rights, and public health concerns [1]. Underutilization of maternal health care services is strongly associated with the frequency of unintended pregnancies, leading to negative social and health consequences for mothers, their children, and families at large, including increased risks of maternal mortality, unsafe abortions, and inadequate maternity care [2,3].

Unwanted pregnancies contribute significantly to maternal mortality and morbidity and are a leading cause of abortions performed in unsafe environments. Shockingly, over 80,000 women lose their lives annually due to unsafe abortions, with the majority occurring in underdeveloped nations [4]. Global estimates reveal approximately 121 million unintended pregnancies between 2015 and 2019, with an average of 64 unintended pregnancies per 1000 women aged 15 to 49, predominantly occurring in developing countries, particularly in South Asia [5].

Pakistan, as a developing country, faces challenges in family planning, with low contraceptive prevalence (35.4%) and a high unmet need for family planning (20.1%), resulting in a high fertility rate of 3.6 births per woman and a substantial burden of unintended pregnancies. The Pakistan Demographic and Health Survey (PDHS) indicates a slow decline in fertility rates over the past three decades, with a significant proportion falling under the category of unplanned pregnancies. The low contraceptive prevalence rate of 34%, with only 25% of couples using modern methods and 9% relying on traditional methods, contributes to the persistently high burden of unintended pregnancies in the country [6].

Existing research has highlighted the complications associated with unintended pregnancies, including preterm birth, low birth weight, and other adverse pregnancy outcomes [7, 8, 9,10]. Unwanted pregnancies have been linked to negative newborn outcomes [11]. In the developing world, unwanted pregnancies exert a substantial impact on health, economic stability, and social development. Complications such as gestational hypertension, premature delivery, C section, and low birth weight have been associated with unintended pregnancies. Given the limited data available on this topic, it is crucial to explore the outcomes of unintended pregnancies, particularly among developing nations populations [9].

This study aims to examine the prevalence of unintended pregnancy using the London Measure of Unplanned Pregnancy (LMUP) and assess its impact on maternal and neonatal outcomes in tertiary care hospitals of Rawalpindi and Islamabad. Understanding the negative implications of unintended pregnancies on maternal and neonatal morbidity and mortality is imperative, and this research endeavors to fill the existing knowledge gap.

METHODS

Study design and sample

An analytical cross-sectional study design with convenience sampling was used to recruit women from three tertiary care hospitals in Rawalpindi and Islamabad, Pakistan. The study focused on postpartum women admitted for delivery as the study population. The recruitment of subjects was based on the patient admission record, including expectant women regardless of age and period of gestation. The decision to collect data from this population was based on the convenience and easy availability of these women, and their consent was obtained prior to their inclusion in the study.

The inclusion criteria for the study were as follows: women who had recently given birth and were in the postpartum period within the first five days, women who delivered their babies in tertiary care hospitals located in Rawalpindi and Islamabad, and postpartum women of any age.

On the other hand, the exclusion criteria were defined as follows: women who delivered their babies outside the specified tertiary care hospitals in Rawalpindi and Islamabad, postpartum women after five days of delivery, postpartum women with incomplete medical records or missing data required for analysis, women with multiple pregnancies (such as twins or triplets) to avoid confounding effects on maternal and fetal outcomes, and postpartum women with known pre-existing medical conditions (such as diabetes, hypertension, HIV/AIDS) that could independently impact maternal and fetal outcomes.

Sample Size Estimation
The sample size calculation was derived from a prior study's 46% prevalence of unintended pregnancy and its associated risk factors [11]. With a significance level of $\alpha = 0.05$ and a power of 0.8, we determined that 377 eligible women should be included. To account for a potential 10% withdrawal rate, we aimed to recruit 400 women for this study.

Data Collection Tool
he choice of variables was made through a thorough review of existing studies in the literature, and a panel of five experts from the Neonatology & Pediatrics and Gynecology & Obstetrics department critically evaluated the selection.
The data collection tool consisted of three distinct components, each addressing different aspects of the research objectives.
The first component of the questionnaire included standard questions aimed to gather information about the respondents' characteristics and sociodemographic background.
The second section of the questionnaire utilized the "London Measure of Unintended Pregnancy" (LMUP) scale [12]. This validated psychometric tool, available in Urdu, was employed to assess the degree of intention or planning associated with the pregnancies under study. The LMUP scale consists of twelve questions that comprehensively evaluate different aspects of pregnancy planning. By assigning a numerical score ranging from "0" to "12", with "0" representing a entirely unplanned pregnancy and "12" indicating a intensely planned pregnancy, the researchers were able to quantify the level of intention behind each participant's pregnancy.
The third section of the questionnaire was dedicated to collecting data on maternal and neonatal outcomes. Regarding maternal attributes, data was collected on financial reliance, parity (nulliparous, multiparous, or grand multiparous), and antenatal care received. As for neonatal attributes, variables such as gender, birth weight, gestational age, 1-minute and 5-minute Apgar scores, neonatal morbidity, neonatal pathology (encompassing jaundice, neonatal sepsis, respiratory insufficiency, and resuscitation), and neonatal mortality were included.

Data Collection Method
The relevant data was obtained from the obstetrics and gynecology wards, and the necessary information was gathered within five days post-delivery. The sampling process involved successive women admitted to the gynae department. Information on maternal and neonatal outcomes was obtained from medical records and included medical history, obstetric history, course of gestation, course of labour and delivery, and course of postpartum.
Data on intrapartum, post-partum health outcomes, and neonatal complications during hospitalization were collected from Bedhead panels and medical records. Prior to the study, the questionnaire was pre-tested on a group of pregnant women selected at random who were awaiting delivery at the Tertiary care Hospitals in Rawalpindi and Islamabad.

Ethical Consideration
The present study received approval from the Ethical Committee of Armed Forces Post Graduate Medical Institute, Rawalpindi, Pakistan (Reference: 342-AAA-ERC-AFPGMI). The study objectives were clearly explained to all participants before the study commenced. Confidentiality and privacy of

pregnant women were ensured, and verbal informed consent was obtained from all individuals involved.

Data/ Statistical Analysis

Version 26 of Statistical Package for Social Science (SPSS) was utilized for data analysis. Prior to data input and analysis, pre-corded and operationalized questions were administered. For the descriptive analysis, categorical variables were presented as frequencies or percentages, while continuous variables were represented as means. Components of the LMUP were utilized to determine the rate of unintended pregnancy. It was suggested to the authors that the score be divided into two categories for prevalence estimation and categorical variables. A score >10 is associated with a higher proportion of intended pregnancies, whereas scores of 10 are associated with unintended pregnancies. To compare categorical variables (neonatal and maternal outcomes), the Chi-square test was utilized. A significance level of $p < 0.05$ was deemed statistically significant.

RESULTS

A total of 400 women with a mean gestational age of 27 weeks were included in the current study. Among the study participants, 162 (40.5%) reported unintended pregnancies, while the remaining 238 (59.5%) reported intended pregnancies. Detailed information on the socio-demographic profile and relevant factors concerning the women are provided in **Table 1.**

Table 1. Frequency distribution of sociodemographic and women-related variables

Variable	N	(%)
Pregnancy Intention		
Intended (Score >10)	238	59.5
Unintended (Score <10)	162	40.5
Area of Residence		
Rural	67	16.8
Urban	333	83.3
Family Income Utilization		
Difficulty in meeting monthly needs	27	6.8
Just Adequate to meet needs	152	38.0
Sufficient to meet monthly needs	185	46.3
More than enough to meet needs	36	9.0
Pregnant women age		
<20 years	41	10.3
20-24 Years	169	42.3
25-29 Years	147	36.8
> = 30 Years	43	10.8
Pregnant women's education		
No Education	178	44.5
Primary or less	118	29.5
(1-5 years of schooling)	104	26.0
Middle (6-8)	178	44.5
The educational level of the spouse		
No education	136	34.0
Primary or less	130	32.5
(1-5 years of schooling)	134	33.5
Middle (6-8)	136	34.0
Employment status of women		
Employed	29	7.2

Unemployed	371	92.8
Employment status of husband		
Unemployed	27	6.8
Craft and related trades worker	328	82.0
Laborer	11	2.8
Skilled in agriculture, Fores, try and fishery	20	5.0
Pregnant Women's Age at marriage		
≤20 Years	297	74.3
> 20 Years	103	25.8
Parity status		
<2	157	39.3
2-3	78	19.5
3-4	84	21.0
>5	81	20.3
Birth Interval (years)		
<2	157	39.3
2-3	78	19.5
3-4	84	21.0
4-5	81	20.3
>5	157	39.3
History of Abortion/ Miscarriage		
Yes	29	7.2
No	371	92.8
Previous illness		
None	300	75.0
Hypertension	91	22.8
Epilepsy	2	.5
D.M.	4	1.0
Renal Disease	2	.5
Asthma	1	.3

Family planning characteristics
Table 2 presents an overview of the family planning demographics in the study population. Among the women included, 77 (19%) reported being aware of at least one contraceptive method; however, only 17% of them reported actually using contraception. The utilization of contraceptives remained relatively low, with oral contraceptive tablets and condoms being the most commonly used methods, reported by 6.2% of the women. Natural methods and intrauterine devices were reported by 2.2% of the participants. Furthermore, only 6.3% of the women demonstrated knowledge about emergency contraception.

Table.2 Availability and use of family planning methods among study participants

Variable	N	%
Knowledge about Family Planning		
Yes	77	19.3
No	323	80.8
Family planning practice		
Ever used	69	17.3
Never used	331	82.8
Most recent practice		
Natural and traditional methods	9	2.3

Oral contraceptive pills (OCP)	25	6.3
Condoms	25	6.3
Depot methoxy acetic acid (DMPA)	1	.3
Intrauterine contraceptive devices (IUCD)	9	2.3
Knowledge of emergency contraceptives		
Yes	27	6.8
No	373	93.3

Health of women and antenatal characteristics

Only one (0.6%) of women who became pregnant unintentionally consumed peri-conceptional folic acid. Almost 90% began supplementation after conception, and 87% complied with supplementation after conception. One hundred fifty-two (93%) of women with intended pregnancy had 4-8 prenatal visits. Periconceptional folic acid supplements annotation significantly correlated with pregnancy intention(p<0.05). **(Table. 3)**

Table. 3 Pre-pregnancy preparations

Characteristics	Pregnancy Intention		P value
	Intended Pregnancy N (%)	**Unintended Pregnancy N (%)**	
Folic Acid Supplementation			
Preconception	9 (3.8%)	1(0.6%)	0.04
At pregnancy confirmation	9(3.8%)	12(7.4%)	
After the confirmation of pregnancy	220(92.4%)	149(92%)	
Compliance with nutritional supplements			
Poor	1(.4%)	6(3.7%)	0.14
Fair	207(87%)	143(83.3%)	
Average	14(5.9%)	11(6.8%)	
Good	10(4.2%)	1(.6%)	
Excellent	6(2.5)	1(.6%)	
Antenatal Visits			
<4	5(2.1%)	7(4.3%)	0.36
4-8	226(95%)	152(93%)	
>8	7(2.9%)	3(1.9%)	

Maternal health outcomes

In the cohort of women with unintended pregnancies, 7% (n=12) disclosed experiencing fetal distress during pregnancy, signifying possible complications for the developing fetus. Moreover, 19% of these women encountered at least one postpartum complication after childbirth, illuminating the heightened risks linked to unintended pregnancies during the postpartum phase. On the other hand, among women with intended pregnancies, a majority of 221 individuals (92%) successfully delivered their babies vaginally, indicating a higher likelihood of favorable birth outcomes. These findings support the notion that pregnancy intention plays a significant role in determining the mode of delivery and subsequent maternal and fetal well-being.

Through this rigorous statistical analysis, we established a significant association between pregnancy intention and several important factors, including fetal distress, the onset of labor, the presence of postpartum complications, and the occurrence of preeclampsia (p<0.05). These results, as presented in Table 4, provide compelling evidence of the impact of pregnancy intention on various maternal and neonatal health outcomes.

Table. 4 Intra-Partum, Post-Partum Maternal Outcomes

Characteristics	Pregnancy Intention		P value
	Intended Pregnancy N (%)	Unintended Pregnancy N (%)	
Onset of Labour			
Spontaneous	221 (92.9)	133 (82.1)	0.01
Induce	10 (4.2)	10 (6.2)	
Planned or unplanned Caesarian section	7 (2.9)	19 (11.7)	
Fetal distress			
Yes	1 (.4)	12 (7.4)	0.00
No	237 (99.6)	154 (92.6)	
Presence of post-partum complications			
Yes	22 (9.2)	31 (19.1)	0.00
no	216 (90.8)	131 (80.9)	
Post-partum hemorrhage			
yes	16 (6.7)	14 (8.6)	.474
no	222(93.3)	148 (91.4	
Post-partum Fever			
Yes	6	8	0.26
no	232	158	
Intensive care unit (ICU) admission			
yes	18	11(6.8)	0.68
No	231 (97.1)	151 (93.2)	
Preeclampsia			
yes	4(1.7)	11 (6.8)	**0.00**
no	234 (98.3)	151 (93.2)	
Other complications			
yes	12 (5.0)	8 (4.9)	0.96
No	226 (95.0)	154 (95.1)	

Neonatal outcomes

The study included a sample of 400 neonates, and it is worth noting that there were no cases of multiple births within this cohort. Descriptive statistics were conducted to analyze the characteristics of the neonates, providing valuable insights into their health outcomes. Among the sampled neonates, fifteen individuals (3.75%) were born preterm, indicating a higher risk for developmental challenges and health complications. Additionally, twenty-eight infants (7.0%) had low birth weight, which further highlights the vulnerability of these newborns and the potential impact on their long-term health and development. Furthermore, two infants (0.5%) had critically low APGAR scores, signifying immediate medical attention and support upon delivery.

Notably, there were statistically significant differences observed between unintended and planned pregnancies in terms of these neonatal health outcomes ($p<0.05$), emphasizing the influence of pregnancy intention on the well-being of the newborns. This underscores the importance of considering pregnancy intention as a critical factor in assessing and addressing the potential risks and challenges faced by neonates born from unintended pregnancies.

Furthermore, the study revealed that only a small proportion of infants, specifically twenty-two (5%), received breastfeeding initiation within the initial hour after birth. Early initiation of breastfeeding is widely recognized as a crucial practice for promoting optimal neonatal health and establishing a strong foundation for breastfeeding success. The low rate of early breastfeeding initiation suggests the need for increased awareness and support for breastfeeding practices, particularly in the context of

unintended pregnancies. Moreover, the statistical analysis conducted in current study revealed significant associations between pregnancy intention and several key neonatal health indicators, including prematurity, neonatal resuscitation, and NICU admissions (p<0.05). These findings, as presented in Table 5, highlight the impact of pregnancy intention on the immediate health outcomes of the neonates, emphasizing the importance of addressing pregnancy intention as a critical factor in promoting favorable neonatal health outcomes (Table 5.)

Table. 5 Neonatal Outcomes

Characteristics	Pregnancy Intention		P value
	Intended	unintended	
Birth weight (grams, n = 400)			
Normal	231 (97.1)	141 (87.0)	**0.00**
LBW	7 (2.9)	21 (13.0)	
Apgar 5 min			
Critically low (0-3)	1(.4)	1 (.6)	**0.03**
Below Normal (4-6)	1 (.4)	7 (4.3)	
Normal (7-10)	236 (99.)	154 (95.1)	
Breastfeeding within one hour			
yes	17	5	.08
No	221	157	
Presence of neonatal complications			
yes	30 (12.6)	32 (19.8)	.05
no	208 (87.4)	130 (80.2)	
Prematurity			
Yes	4 (1.7)	11 (6.8)	**.00**
no	234 (98.3)	151 (93.2)	
Jaundice			
Yes	11 4.6	10 6.2	.49
no	227 95.4	152 93.8	
Fever			
Yes	14 5.9	4 2.5	.10
no	224 94.1	158 97.5	
Sepsis			
Yes	1 .4	3 1.9	.15
no	237 99.6	159 98.1	
Respiratory distress			
Yes	0	2	0.08
no	238 (100)	160	
Neonatal Resuscitation			
Yes	4 1.7	12 7.4	**0.00**
no	234 98.3	150 92.6	
NICU Admission			
Yes	7 2.9	18 11.1	**0.00**
no	231 97.1	114(88.9)	
Other complications			
Yes	2 .8	2 1.2	0.69
no	236 99.2	160 98.8	

DISCUSSION

The purpose of the quantitative investigation on expectant women was to examine the effects of unintended pregnancy on maternal and neonatal health outcomes. The study found that women with unintended pregnancies had adverse maternal and neonatal outcomes and more negative labor experiences. The current findings indicate unequivocally that unintended pregnancies were detrimental to maternal and newborn health outcomes. The study findings presented valuable insights into different aspects of pregnancy intention and its influence on the health outcomes of mothers and newborns. The study revealed various maternal and neonatal health outcomes associated with pregnancy intention. Among women with unintended pregnancies, 7% reported fetal distress during pregnancy and 19% experienced postpartum complications. The rate of vaginal delivery was higher among women with intended pregnancies (92%) compared to those with unintended pregnancies (82%). Pregnancy intention was significantly associated with factors such as fetal distress, onset of labor, postpartum complications, and preeclampsia. Neonates born from unintended pregnancies had higher rates of prematurity (3.75%), low birth weight (7%), and critically low Apgar scores (0.5%). Pregnancy intention showed significant associations with these neonatal health indicators. Only 5% of infants received breastfeeding initiation within the initial hour after birth., highlighting the need for increased awareness and support for breastfeeding practices, particularly in the context of unintended pregnancies.

In this research, the rate of unplanned pregnancies was found to be 40.5%, which is below the approximated global prevalence of unplanned pregnancies (48%) [13]. The hospital-based cross-sectional survey conducted in Pakistan revealed that 38.2% of pregnancies were unintended, which was slightly lower than the current percentage reported in the previous study [11]. This discrepancy may be attributed to several factors, including the methodology used and the inclusion of community-based studies conducted during pregnancy that documented fewer unintended pregnancies. It is worth noting that community-based investigations often include pregnancies ending in miscarriage or termination in their sample, which may influence the reported rates. Additionally, the observed differences in pregnancy intentionality during pregnancy could be attributed to alterations in the definition and measurement of pregnancy intentionality over time.

In a study by Bearak et al. (2018), it was established that the incidence of unexpected pregnancies is higher in places where abortion is legally prohibited. They found that approximately 70% of unintended pregnancies end in abortion in nations where abortion is permitted [14]. This suggests that the actual rate of unintended pregnancies in these advanced nations is likely underestimated, as the vast majority of pregnancies that result in a live birth are considered planned. The implications of these findings are significant, as they highlight the complex relationship between legal frameworks, access to reproductive healthcare services, and unintended pregnancies. Comparing the proportion of unintended pregnancies in the current study to other South Asian countries, it was slightly higher than in India (38.5%), Afghanistan (36.9%), and Bangladesh (29%), with Nepal reporting the highest proportion of unintended pregnancies among South Asian countries at 41% [15,16,17]. These regional differences in unintended pregnancy rates could be attributed to various factors, including cultural norms, socioeconomic conditions, healthcare infrastructure, and availability of reproductive healthcare services.

In contrast, the percentage of unintended pregnancies in this study was notably greater than that reported in developed countries. For instance, the Islamic Republic of Iran reported an 27% rate of unintended pregnancies, Belgium reported 2%, Kenya reported 18%, and the United Kingdom reported 16.2% [18,19,20,21]. These differences reflect disparities in reproductive health education, accessibility to contraception, and family planning support between developed and developing countries. An analysis of the data revealed alarmingly low levels of awareness and utilization of family planning methods among the study population. Only 19.3% of participants reported being aware of family planning methods, indicating a significant gap in knowledge and access to reproductive healthcare services. Moreover, awareness of emergency contraceptives was even lower at 6.8%, highlighting a critical need for improved education and awareness campaigns regarding

contraceptive options. Furthermore, the study found that only 17.5% of participants reported using family planning methods, indicating a substantial gap between knowledge and utilization. These findings are consistent with the Pakistan Demographic and Health Survey conducted in 2018, which reported a 25% awareness of emergency contraceptives in the general population [6]. The lack of knowledge and utilization of contraceptive methods has been consistently associated with unintended pregnancies in studies conducted in Pakistan, Bangladesh, and Nepal, underscoring the need for comprehensive reproductive health education and improved access to family planning services. The study's hypothesis that unintended pregnancy has a negative and significant impact on maternal and neonatal outcomes is supported by the findings. The more a woman scored on the scale used to measure unintended pregnancy (LUMP), the greater the negative alterations observed in pregnancy, adversely affecting the health of both the mother and child. These alterations can range from delayed initiation of prenatal care to increased risk of complications during pregnancy and childbirth [22]. These results emphasize the urgent need to address unintended pregnancies through comprehensive reproductive health programs that encompass education, access to contraception, and supportive healthcare services. By addressing the gaps in knowledge and expanding the range of available contraceptive options, the incidence of unintended pregnancies could potentially be reduced, leading to improved maternal and child health outcomes. It is essential to invest in comprehensive sex education programs, promote awareness campaigns about contraception and family planning, and ensure equitable access to reproductive healthcare services. Moreover, healthcare providers should play a pivotal role in counseling women and couples about the importance of planned pregnancies, the available contraceptive methods, and the potential risks associated with unintended pregnancies. The study provides valuable insights into the prevalence of unintended pregnancies and its implications for maternal and neonatal health outcomes in Pakistan. The findings highlight the need for comprehensive reproductive health education, improved access to family planning services, and supportive healthcare infrastructure. By addressing these challenges, we can strive towards reducing the incidence of unintended pregnancies and improving the overall well-being of women and children. The study examined compliance with prenatal vitamin and mineral supplementation, antenatal folic acid supplementation, and overall prenatal behavior using the Adaptive Behavior Inventory for Pregnant Women. The findings revealed a significant correlation between unwanted pregnancies and subpar maternal care. Women with unintended pregnancies were more likely to exhibit inadequate antenatal care, including a failure to adhere to nutritional supplement guidelines and a lack of periconceptional folic acid use. These results are consistent with previous research conducted by [23,24], which also found associations between unwanted pregnancies and suboptimal prenatal care. Studies conducted in the United States have shown that women who experience unexpected pregnancies are less likely to engage in healthy pregnancy behaviors and seek adequate prenatal and antenatal care. Factors such as smoking during pregnancy and insufficient vitamin intake have been linked to unwanted [25,26]. Similarly, a study conducted in Belgium reported that unwanted pregnancies were significantly associated with factors such as inadequate folic acid or vitamin consumption and fewer prenatal clinic visits [18]. In light of these findings, it is crucial for nurses and midwives to promptly identify women with unintended pregnancies and provide them with appropriate prenatal education and support to ensure they receive adequate care. The reasons why women with unwanted pregnancies do not receive adequate prenatal care remain unclear. Some evidence suggests that women who experience unintentional pregnancies may be less likely to seek prenatal care because they may not discover their pregnancy until a later stage. Additionally, women facing an unplanned pregnancy may be less inclined to take the initiative in seeking medical attention. It is important to note that the association between unintended pregnancies and maternal problems persists even after considering the utilization of maternal health services. Pregnancy-related stress may offer a potential explanation for this association. Peri-conceptional folic acid supplementation plays a crucial role in early fetal development and can help prevent certain birth defects. However, the low prevalence of folic acid consumption during the peri-conceptional period among women with unintended pregnancies indicates a missed opportunity to promote optimal prenatal health and reduce

the risk of developmental issues. On a positive note, the high proportion of women with intended pregnancies who attended the recommended number of prenatal visits underscores their proactive approach to prenatal care. This highlights the importance of adequate prenatal care in ensuring positive maternal and fetal outcomes. It is crucial to emphasize the importance of prenatal care, educate women about the benefits of folic acid supplementation, and provide comprehensive support to ensure optimal outcomes for both maternal and fetal health.

In the study, it was found that 7% of women with unintended pregnancies reported fetal distress, and 19% experienced at least one perinatal complication. Vaginal delivery was observed in 92% of women with planned pregnancies and 82% of women with unplanned pregnancies. The statistical analysis indicated significant associations between pregnancy intention and factors such as fetal distress, onset of labor, postpartum complications, and preeclampsia. These findings are consistent with previous research demonstrating that unintended pregnancies are linked to an elevated likelihood of unfavorable antenatal, postnatal, and birth results. Previous studies [10,27,28] have also shown that unintended pregnancies contribute to adverse maternal health outcomes, which may be one of the factors contributing to high maternal mortality rates in the country. The association between unintended pregnancies and conditions such as pre-eclampsia, postpartum hemorrhage, and postpartum pre-eclampsia has been established in previous research [10]. Additionally, research [29] have suggested that unintended pregnancies may act as a mediator between contraceptive usage and maternal mortality. High rates of unintended pregnancy (32.6%) among women with pre-eclampsia have also been reported in previous literature [30]. Access to reproductive health services can empower women to plan their pregnancies and have healthier outcomes for both themselves and their babies. The presence of fetal distress among unintended pregnancies raises concerns about potential adverse effects on fetal development, highlighting the need for further investigation into the underlying factors contributing to these complications. Similarly, the higher incidence of postpartum complications among women with unintended pregnancies underscores the importance of comprehensive postpartum care and support to minimize potential risks and ensure optimal recovery for both the mother and baby. By addressing the factors associated with unintended pregnancies and providing appropriate care and support throughout the perinatal period, healthcare providers can contribute to reducing adverse outcomes and promoting the overall well-being of mothers and infants. The higher rate of vaginal delivery observed among women with intended pregnancies indicates a more favorable obstetric profile, which can be attributed to factors such as better prenatal care, adequate preparation, and a lower likelihood of complications during labor. This finding highlights the importance of pregnancy intention as a critical determinant of maternal and neonatal health outcomes. Recognizing the influence of pregnancy intention on these outcomes allows healthcare providers to tailor their interventions and support services to address the specific needs of women with unintended pregnancies. This personalized approach can contribute to reducing adverse outcomes and promoting better overall maternal and infant health.

An important finding of this study is the substantial association between pregnancy intention and low birth weight. While low birth weight was not identified as a specific neonatal outcome in many studies, this research uncovered an association between unintended pregnancy and inadequate birth weight. Although there is a scarcity of literature specifically addressing this association, recent research supports the significant correlation between pregnancy intention and low birth weight [31] Furthermore, a study conducted in Rural India also demonstrated a substantial link between unintended pregnancy and low birth weight [32]. Additionally, Mohamed et al. (2019) conducted a cross-sectional study in Egypt investigating the effects of unintended pregnancy on neonatal outcomes, and their findings align with the current study's results [33]. These studies collectively suggest that unintended pregnancies may be a contributing factor to low birth weight, highlighting the need for further research and interventions to address this issue. Understanding the association between pregnancy intention and low birth weight is crucial for healthcare providers to identify and support women at risk, ultimately aiming to improve neonatal health outcomes. By incorporating this knowledge into prenatal care and providing appropriate interventions, healthcare professionals can

work towards reducing the incidence of low birth weight associated with unintended pregnancies and promoting healthier outcomes for both mothers and infants.

According to recommendations from the World Health Organization (WHO, 2017) and the United Nations Children's Fund, breastfeeding should ideally commence within the first hour after delivery and continue exclusively for the first six months of an infant's life [34]. However, in Pakistan, the practice of early breastfeeding initiation, particularly prolateral feeding, is prevalent (PDHS, 2018). Unfortunately, Pakistan has the lowest prevalence of early breastfeeding initiation and the highest rate of non-exclusive breastfeeding among countries in the South Asian region [35]. In the current study, only a small percentage of study participants (5.5%) initiated breastfeeding within one hour of delivery. Surprisingly, there was no significant difference observed between women with intended and unintended pregnancies regarding early breastfeeding initiation. However, it is important to note that the limited number of infants who were breastfed in this analysis may restrict the ability to draw definitive conclusions regarding the relationship between pregnancy intention and breastfeeding initiation. While the available evidence regarding the association between pregnancy intention and the initiation of breastfeeding is scarce, it is crucial to recognize the significance of early breastfeeding initiation and exclusive breastfeeding for optimal infant health. Further research is needed to explore the potential impact of pregnancy intention on breastfeeding practices and to identify any underlying factors that may influence breastfeeding initiation rates. By promoting awareness and providing support to mothers, healthcare professionals can contribute to improving breastfeeding practices and ensuring the well-being of both mothers and infants in the early stages of life.

The findings of the current study indicate that there is a significant association between pregnancy intention and various neonatal outcomes, such as Apgar score at 5 minutes, premature delivery, and admission to the neonatal intensive care unit (NICU). These results align with prior research that has consistently shown that unintended pregnancies can lead to adverse outcomes for the newborn [19].

Adu-Bonsaffoh and Seffah (2015) reported a higher risk of preterm birth and low birth weight (LBW) in unintended pregnancies compared to planned pregnancies [30]. Shah et al. (2011), in a systematic review, identified ten studies that demonstrated an increased risk of preterm birth and LBW in unintended pregnancies [31]. This discrepancy may be due to the fact that multiple factors contribute to the risk of premature birth, as suggested by other systematic reviews [37,38]. Although the precise mechanisms linking pregnancy intention to birth weight remain incompletely understood, various hypotheses have been put forth. One explanation posits that emotions surrounding an unplanned pregnancy could result in the conscious or subconscious neglect of maternal health, delayed initiation of antenatal care, or inadequate weight gain during pregnancy, all potentially influencing the newborn's weight. Additionally, research indicates that women facing unplanned pregnancies may encounter increased psychological distress, potentially contributing to infants being born with lower birth weight.

The inconsistency between studies may also be attributed to the diverse methods of measuring and classifying pregnancy intention across different studies. In summary, the results of the current study align with existing research regarding the association between pregnancy intention and neonatal outcomes. Unintended pregnancies have been consistently linked to adverse outcomes such as low birth weight and preterm birth. Various factors, including maternal neglect of health, delayed prenatal care, inadequate weight gain, and psychosocial stress, may contribute to these associations. However, further research is needed to fully understand the complex interplay between pregnancy intention and neonatal outcomes and to identify effective strategies for mitigating these risks and promoting better maternal and infant health.

CONCLUSIONS

The study revealed that a significant proportion of women experienced unintended pregnancies, indicating a need for better access to family planning services. Maternal outcomes were poorer for women with unintended pregnancies, including a higher incidence of fetal distress, postpartum complications, and preeclampsia. Neonates from unintended pregnancies had higher rates of

prematurity, low birth weight, and neonatal complications. Early initiation of breastfeeding was also low. In conclusion, this study examined the effect of unintended pregnancy on maternal and infant health indicators. Unintended pregnancies were associated with a range of adverse outcomes, including lower rates of prenatal care utilization, inadequate nutrition, increased risk of complications, and suboptimal birth outcomes.

The study highlighted the need for enhanced support and interventions targeting women with unintended pregnancies. Strategies to improve maternal and fetal health outcomes should focus on promoting access to contraception and family planning services, improving the quality and utilization of prenatal care, addressing maternal mental health and psychosocial support, and implementing educational interventions and awareness campaigns.

The study contributes to the growing body of evidence on the subject. It provides insights into the specific challenges faced in the context of Pakistan and sets the stage for future research directions aimed at improving the health and well-being of mothers and infants affected by unintended pregnancies. By addressing these issues, healthcare professionals and policymakers can work towards reducing the burden of unintended pregnancies and optimizing maternal and fetal health outcomes.

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Conflict of interest
The authors have no conflict of interest to declare.

Ethical approval
The present study received approval from the Ethical Committee of Armed Forces Post Graduate Medical Institute, Rawalpindi, Pakistan (Reference: 342-AAA-ERC-AFPGMI).

Authors contributions
SG & RA provided research material, collected and organized data, conducted research and interpreted data, and wrote initial drafts. HM,SB and FP wrote the methods and results.SB wrote the introduction and discussion. HM, RA and FP supervised the research, participated in the review, provided logistical support, and revised the final version of the article. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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