Husbands' knowledge and attitudes regarding postpartum depression (#104131)

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Husbands' knowledge and attitudes regarding postpartum depression

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Abstract

Background: Postpartum depression (PPD) is a common mental health disorder that occurs at any time during the first year after childbirth. PPD has negative health consequences for mothers and infants as well as other family members. Early detection and treatment of PPD are important. The aim of this study is to assess husbands' knowledge and attitudes toward PPD. **Methods:** A cross-sectional design was used in this study. Recruitment was done through social media and face-to-face methods. A convenience sample of 401 husbands was used. Data were analyzed using descriptive statistics and Pearson simple correlation analysis. **Results:** Almost half of the husbands (45.4%) had a high level of knowledge about PPD. Nearly two-thirds of husbands (66.1%) had a positive attitude toward PPD and previous information about PPD. Family and friends considered as the most sources for husbands' PPD knowledge. There was a positive correlation between knowledge and attitudes of husbands toward PPD (p<.005). **Conclusion:** The husbands had a good level of knowledge and a positive attitude toward PPD. However, there is a need for further research to strengthen husband knowledge and attitude given the presence of some negative beliefs related to PPD in this study.

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Methods: A cross-sectional design was used in this study. Recruitment was done through social media and face-to-face methods. A convenience sample of 401 husbands was used. Data were analyzed using descriptive statistics and Pearson simple correlation analysis.
Results: Almost half of the husbands (45.4%) had a high level of knowledge about PPD. Nearly two-thirds of husbands (66.1%) had a positive attitude toward PPD and previous information about PPD. Family and friends considered as the most sources for husbands' PPD knowledge. There was a positive correlation between knowledge and attitudes of husbands toward PPD ($p < .005$).
Conclusion: The husbands had a good level of knowledge and a positive attitude toward PPD. However, there is a need for further research to strengthen husband knowledge and attitude given the presence of some negative beliefs related to PPD in this study.
Key words: Attitude, Husband, Husband's Support, Knowledge, Postpartum Depression

Introduction

Childbirth is a demanding experience. During pregnancy, a woman goes through a variety of hormonal, physical, emotional, and psychological changes. The mother's familial and interpersonal worlds undergo significant alterations. Postpartum depression (PPD) is considered a major public health problem that affects both mothers and infants. Its incidence after pregnancy can be twice as high as in other stages of a woman's life (Alshikh Ahmad et al., 2021).

Globally, the incidence of PPD is 12%, whereas the general prevalence of depression is 17% among healthy mothers without any history of depression (Shorey et al., 2018). The Middle East has the highest prevalence of PPD (26%), whereas Europe has the lowest (8%; Shorey et al., 2018). The incidence of PPD has increased among Arab women and is expected to affect at least one in five mothers (Ayoub et al., 2020). According to studies conducted in Arab countries, the prevalence of PPD is estimated to be 52.9% in Jordan, 28.2% in Syria, and 26.6% in Egypt (Goweda & Metwally, 2020; Roumieh et al. 2019; Taybeh, 2021). In Saudi Arabia, the prevalence of PPD is estimated to be 38.50% in Riyadh, 20.9% in Jeddah, and 32.8% in Alkharj (Al Nasr et al., 2020; Alsayed et al., 2021; Alzahrani et al., 2022).

PPD is defined as a depressive episode of moderate to severe intensity, and it can happen anytime between 4 weeks to 1 year postpartum (Beck, 2002). In the Middle East, a systemic review by Alshikh Ahmad et al. (2021) showed that the PPD prevalence is 27%; this figure varies during the postpartum period, with estimates ranging from 19% (4–12 months) to 31% (birth to 3 months). Tearfulness, anxiety, emotional stress, irritability, sleep disorders, memory problems, guilty feelings, loss of appetite, and suicidal thoughts, in addition to feelings of weakness and inability to deal with the baby, characterize PPD (American Psychiatric Association, 2013). PPD is not a self-limiting condition; it needs treatment. PPD is different from postpartum blues, which begin 3 to 4 days after childbirth and resolve by day 10 without therapy (Callahan & Caughey, 2018).

The exact etiology of PPD remains unknown, the development of PPD is closely linked with biological, psychological, socioeconomic, and cultural factors. PPD can n be influenced by physical changes, such as hormonal fluctuations, and obesity. psychological factors for example self-esteem, difficulty adapting to motherhood, lack of parenting knowledge, and insufficient husband support. In addition, social factors such as financial strain can increase the risk of PPD (Alshikh Ahmad et al., 2021; Ayoub et al., 2020; Zhao & Zhang, 2020).

PPD has poor health consequences for mothers and newborns as well as other family members, such as instability and disruption in the mother's relationship with her husband and family and in her bond with the infant, attachment problems, and negative child developmental outcomes (Saharoy et al., 2023; Slomian et al., 2019). Women who have PPD are significantly more likely to experience future episodes of depression and other mental and physical health problems (Abdollahi & Zarghami, 2018; Zakeri et al., 2022).

Both mothers and caregivers frequently dismiss the symptoms of PPD as a natural side effect of childbirth. Only 20% of women who experience PPD symptoms report them to their health care providers (Anokye et al., 2018).

Mothers with untreated PPD have been linked to an increased risk of suicide (Slomian et al., 2019). About 2.3% of mothers who suffered from PPD in 2020 had suicidal ideation or thoughts (Tabb et al., 2020).

Most postpartum women develop PPD while staying at home (Chongpanish et al., 2014). A study conducted in Saudi Arabia shows that most women with PPD resided in nuclear family households with their husbands (Al-Ghamdi et al., 2019).

A previous study showed that husbands had certain misconceptions about the causes and risk factors of PPD (Juntaruksa et al., 2017). Recent studies on PPD among the general population revealed that a lack of knowledge of PPD was found in husbands who can act as the support network for postnatal women (Alsabi et al., 2022; Branquinho et al., 2019; Poreddi et al., 2020).

The husband plays an important role detecting the symptoms of PPD and providing necessary support that significantly improves the mother's recovery process and her overall well-being (Ristanti & Masita, 2020). In case the husband has any doubts about PPD symptoms, he can encourage the wife to seek professional help (Pebryatie et al., 2022). It is therefore vital to explore husbands' knowledge of and attitudes toward PPD. Additionally, most research in Saudi Arabia has focused on the prevalence and predictors of PPD. Research on husbands' awareness of PPD has been limited. Hence, this study aimed to assess husbands' knowledge of and attitudes regarding PPD.

Materials & Methods

Study Design

A descriptive correlation cross-sectional design was used to achieve the aim of the study: assessing husbands' knowledge and attitudes toward PPD.

Sampling

The researcher used a nonprobab convenience and snowballing sample of 401 husbands, who were recruited based on meeting the inclusion criteria. The inclusion criteria were husbands ages 20 years and above, married, having children, speaking Arabic, residing in Saudi Arabia, and willing to participate in the study.

Sample Size

The sample size of this study was calculated using the following formula (Danil, 1999):

$$n = \frac{z^2 P(1 - P)}{d^2}$$

Were

n: Calculated sample size Z: The standard variable of the normal distribution corresponding to the 95% confidence level (Z-value = 1.96) P: Anticipated population proportion of knowledge/attitudes of husbands toward postpartum depression. d: Precision (margin of error = 5%) Using 95% confidence, d = 5%, and P = 50% (assuming no prior information available about P), the estimated sample size was **385** husbands. By considering risk of dropout of 10%, the sample size was increased to **424** husbands.

Recruitment and Study Setting

Participants were recruited online through social media and face-to-face methods. The researcher created digital flyers and posted them on social media (WhatsApp, Snapchat, Facebook, and Twitter). These flyers included the study's title, aims and target population, and a barcode and weblink to access the survey on Google Forms. Next, the researcher sent the survey to families, friends, and health care providers and asked them to send it to all husbands who met the eligibility criteria.

The available participants who had visited East Jeddah Hospital and Al Jamiah Healthcare Center in Jeddah City and met the inclusion criteria were recruited face-to-face. The researcher introduced herself and clearly explained the study's aims. An electronic questionnaire was provided to participants using a barcode. This barcode was distributed personally in the male waiting area of a hospital and primary health care center. Data were collected over five months and one week starting at the beginning of January 2023 and ending in June 2023.

Ethical Considerations

Ethical approval was obtained from the Ethical Committee of the Faculty of Nursing at King Abdul-Aziz University (KAU) in Jeddah (NREC Serial No: Ref No 2M. 53). In addition, ethical approval was obtained from the Ethical Committee of Ministry of Health in Jeddah (reference number IRB Log No: A01592). Then, permission was obtained from East Jeddah General Hospital and Al Jamiah Healthcare Center.

The created flyer included the title of the study, the study aims and target population, and a barcode and weblink to access the survey on Google Forms. After accessing the weblink, participants were given a brief explanation of the study on the first questionnaire page. Anonymity, confidentiality, and the right to refuse participation or withdraw from the study at any time were assured. Participants signed an electronic consent form to approve participation in the study.

Data Collection Tools

The questionnaire was modified and used after written permission was obtained from the author. The researcher translated the modified questionnaire from English to Arabic and translated it back to English. A bilingual expert reviewed the translation. The researcher converted the finalized questionnaire to an online format using Google Forms. The questionnaire consists of three parts: sociodemographic characteristics, knowledge about causes and symptoms of PPD, and attitudes toward PPD.

Part I: Sociodemographic Characteristics

This part consisted of 11 questions about age, nationality, region, level of education, occupation, monthly income, number of years of marriage, number of living children, age of the youngest child, gender of children, and satisfaction with the gender of the baby. There were close-ended questions (yes/no) and category questions that ranged from two to five options per question.

Part II: Knowledge About Causes and Symptoms of PPD

A self-reported questionnaire was adopted from Chongpanish et al. (2014) and Poreddi et al. (2020), who developed and modified it, respectively. This part included 37 questions in two sections. The first section consisted of three close-ended questions (yes/no) to obtain previous information and experience with PPD. One question, Question Number 2 (source of information about PPD), was a multiple-choice question where the participants could select more than one answer. The second section had 33 items: 17 items to measure causes with three negatively worded items (statements 6, 10, and 15) and 16 items to measure symptoms with four negatively worded items (statements 2, 4, 5, and 16). There were three responses for this section ("yes," "no," and "I don't know"). One point (1) was given for each "yes" response, and zero points (0) were given for "no" and "I don't know" responses. The total knowledge scores ranged from "0" to "30." A higher score indicated that the participants had good knowledge about PPD. The scoring system for total knowledge of PPD was categorized as follows:

a) High knowledge level = (23–33).
b) Moderate knowledge level = (12–22).
c) Minimal knowledge level = (0–11).

Part III: Attitudes Toward PPD

To assess husbands' attitudes toward PPD, the researcher used a questionnaire developed by Chongpanish et al. (2014) and modified by Poreddi et al. (2020). The questionnaire consisted of 19 statements with 13 negatively worded items (statements 1, 2, 3, 5, 6, 8, 9, 10, 12, 15, 16, 18, and 19). Each item consisted of a brief statement with a three-category Likert scale format, ranging from 3 (*agree*) to 2 (*partly agree*) to 1 (*disagree*). The total attitude score ranged from "19" to "57." A higher score indicated that participants had positive attitudes toward PPD, whereas scores closer to 19 indicated that participants had negative attitudes toward PPD. Based on the overall mean score, attitudes were categorized as positive if more than the mean score and negative if less than the mean score.

Validity and Reliability

The Arabic version was revised by five experts in the field of nursing studies at KAU. Three experts were from the field of maternal and child nursing, and two experts were from the field of psychiatric nursing. They checked the content validity, completeness, and clarity of the items. Comments and suggestions were considered, and the tool was modified accordingly.

A pilot study was conducted online by sending the questionnaire (Arabic version) via WhatsApp to 10% of the sample population who met the inclusion criteria (38 husbands). The participants were asked to complete the questionnaire and provide comments on any issues they faced. Based on the results of the pilot study, no modifications were made to the study tools. The 38 husbands who participated in the pilot study were included in the study sample. Cronbach's alpha was calculated for PPD total knowledge (0.859), indicating a high level of internal

consistency. Cronbach's alpha for the attitude scale (0.764) indicated a good level of internal consistency.

Data Analysis

SPSS (Statistical Package for the Social Sciences program) version 25 was used for analyzing the data. Negatively worded items were reverse coded before the analysis. Descriptive statistics such as frequency and percentage were used for sociodemographic characteristics. PPD knowledge and attitude scale variables were described using frequencies, percentages, standard deviation, and mean score. Pearson simple correlation analysis was conducted to examine the relationship between PPD knowledge and attitude. A *p*-value of less than or equal to 0.05 was considered significant.

Results

The total responses of participants were 652. However, only 401 who met the inclusion criteria were included in the study (the other respondents were 203 females and 48 husbands who did not meet the inclusion criteria).

Participants' Sociodemographic Characteristics

Table 1 represents the sociodemographic characteristics of the husbands who participated in this study. Out of the total 401 subjects, the majority (89.5%, *n* = 359) were Saudis, and 10.5% (*n* = 42) were non-Saudi. About half of the husbands (48.4%, *n* = 194) were ages 30–39 years, and only 10% (*n* = 40) were ages 50 or older. About three-quarters of the participants were from the western region (74.1%, *n* = 297), whereas 1.7% (*n* = 7) were from the northern region. More than half of the husbands (58.4%, *n* = 234) had attained a bachelor's degree, and 1% (*n* = 4) and 1.7% (*n* = 7) had attained primary and intermediate education, respectively. About two-thirds of the participants were working in the governmental sector (64.8%, *n* = 260), whereas 2.7% (*n* = 11) were not working. More than half of the husbands (54.1%, *n* = 217) had a monthly income of more than 10,000 SAR per month.

Regarding husbands' marital duration and children, almost three-quarters (70.3%, *n* = 282) of husbands were married for more than 6 years, whereas 17.5% (*n* = 70) were married 4–6 years and 12.2% (*n* = 49) were married 1–3 years. Detailed sociodemographic data is shown in Table 1.

Participants' Responses to Previous Information and Experience With PPD

Nearly two-thirds of participants (66.1%, *n* = 265) had previous information about PPD, and about two-thirds (63.1%, *n* = 253) had not come across women with PPD. Of the participants, 84.5% (*n* = 339) of their wives had not been diagnosed with PPD before.

Participants' Source of Information About PPD

Figure 1 shows the percentage of different sources of information about PPD among the participants. Among 401 participants, nearly one-quarter (24.5%) of them got information from

family and friends, whereas 21.4% obtained information from social media. Husbands also got information about PPD from websites, physicians or nurses, other sources, and television (19.2%, 18.6%, 8.4%, and 8%, respectively).

Husbands' Knowledge About Causes of PPD

Table 2 presents responses of the husbands regarding their knowledge about the causes and risk factors of PPD. Nearly two-thirds of participants were aware of causes of PPD, such as lack of family support (65.3%, *n* = 262), increased work pressure and stress (62.8%, *n* = 252), and poor relationship/marital conflicts (60.8%, *n* = 244). However, most participants were unaware of other risk factors for PPD, such as genetic/hereditary (84.0%, *n* = 337), poor education of the mother (73.3%, *n* = 294), and disappointment with gender of the baby (68.8%, *n* = 276). Around three-quarters of the respondents disagreed that there were risk factors for PPD such as possessed ghosts or sin or black magic (76.3%, *n* = 306), being older than 20 years of age (73.6%, *n* = 295), and personal strength (78%, *n* = 314). The mean score of husbands' knowledge about cause of PPD was 9.12 and standard deviation was 4.10.

Husbands' Knowledge About Symptoms of PPD

Table 3 displays responses of the husbands regarding their knowledge about symptoms of PPD. Most participants identified prevalent symptoms of PPD. The symptoms reported by participants were feeling sad/miserable (76.6%, *n* = 307), sleeping problems (76.6%, *n* = 307), feeling stressed/anxious (75.8%, *n* = 304), crying spells for no reason (75.1%, *n* = 301), weight/appetite changes (71.3%, *n* = 286), and irritability (70.8%, *n* = 284). Nearly two-thirds of respondents (64.8%, *n* = 260) reported disagreeing that being interested in doing household tasks was a symptom for PPD, and three-quarters (75.8%, *n* = 304) reported disagreeing that being interested in talking with others was a symptom for PPD. More than half of the participants (56.9%, *n* = 228) disagreed that mother bonding with the baby was a symptom of PPD. The mean score of husbands' knowledge about PPD was 11 and standard deviation was 3.74.

Figure 2 shows the total knowledge about causes and symptoms of PPD. Out of the 401 participants, almost half of them (45.4%, *n* = 182) had a high level of knowledge, followed by more than one-third (37.9%, *n* = 152) having a moderate level of knowledge. Only 16.7% (*n* = 67) had a minimal level of knowledge. The mean score of husbands' total knowledge about causes and symptoms of PPD was 19.91 and standard deviation was 7.07.

The Husbands' Attitudes Toward PPD

Table 4 illustrates the husbands' attitudes toward women with PPD. The majority of respondents (91.5%, *n* = 367) believed "we should be patient and have empathy with women who have PPD," followed by those who reported "I am ready to help if my relative has PPD" (88.5%, *n* = 355). More than three-quarters of husbands also disagreed that "PPD is an uncured disease and will continue increasing in severity" (85.3%, *n* = 342), followed by those who reported that "it is oppressive to take care of a woman who has PPD" (82.8%, *n* = 332) and "mothers with PPD cannot

be good mothers" (81.8%, $n = 328$). Moreover, a majority of the husbands disagreed that "mothers who have PPD should not have another child" (79.3%, $n = 318$), "should stay at home" (78.1%, $n = 313$), "are a burden to the family" (77.8%, $n = 312$), and "the mother and baby should be separated" (70.1%, $n = 281$). Around two-thirds of husbands disagreed that "women with PPD do not require any treatment" (67.8%, $n = 272$) and "they feel shame and do not tell anyone that their relative has PPD" (60.8%, $n = 244$). Moreover, there were some negative attitudes toward women with PPD, such as more than two-thirds of husbands (67.3%, $n = 270$) not believing that PPD is common among women. However, 59.1% ($n = 237$) of the participants disagreed that depressive women were pitiable persons. In addition, 44.1% of the participants did not believe that depressive postpartum women have a high risk for suicide. Also, the participants were inclined to have a neutral attitude on the view that "women with PPD should stop breastfeeding" (44.6%, $n = 179$) or "should be treated in a hospital" (40.9%, $n = 164$). The mean score of husbands' attitudes toward PPD was 45.66 and standard deviation was 3.50.

The total mean score on the attitude scale was 45.66. Based on the mean (46), the participants were categorized as having a positive attitude (> 46) or a negative attitude (< 46). According to this, nearly two-thirds (66.1%) of the participants had a positive attitude toward women with PPD, whereas 33.9% of the participants had a negative attitude toward women with PPD.

Correlation Between Knowledge and Attitudes Toward PPD

Table 5 presents the correlation between husbands' knowledge and attitudes toward PPD. There was a significantly positive correlation ($r = 0.117$, $p < 0.019$) between participants' knowledge and attitudes related to PPD. This indicates that as husbands' knowledge about PPD increases, their attitudes toward it also became more positive.

Discussion

This preliminary study was conducted to explore husbands' knowledge and attitudes toward PPD in Saudi Arabia. The study findings demonstrated a good level of knowledge and positive attitudes toward PPD among the participants. However, there are still misunderstandings and negative beliefs related to PPD among some of the participants. This study revealed a positive correlation between knowledge and attitudes of participants toward PPD.

Participants' Sociodemographic Characteristics

The total study sample consisted of 401 husbands with various sociodemographic characteristics. The sociodemographic of the participants in the current study were consistent with those of a study conducted to examine social support networks' level of knowledge, attitudes, and beliefs regarding PPD in Malaysia, which reported that the majority (75.1%) of respondents were Malay, and 89.1% of them had advanced education (Alsabi et al., 2022). Branquinho et al. (2019) determined the general Portuguese population's knowledge of and attitudes toward PPD, which reported that more

than half (61.2%) were between ages 28 and 47 years, 73.7% had high education, only 6% earned more than €3,000 72.1% lived in urban areas.

Participants' Knowledge About PPD

The findings of this study showed that nearly two-thirds of the participants (66.1%) reported having prior knowledge about PPD, whereas 33.9% did not. This finding aligns with a study conducted in the western region of Saudi Arabia to assess the public's knowledge, attitudes, and barriers to seeking health care regarding PPD, which revealed that 73.3% of participants had heard of or were knowledgeable about PPD, whereas 26.7% were not (Ridha et al., 2019). This suggests an increase in public awareness about PPD in recent years in Saudi Arabia. The Ridha et al.'s (2019) study showed a lower percentage of participants who did not hear about PPD. In contrast, a study in Malaysia found that 74.1% of participants had never heard of PPD before (Alsabi et al., 2022).

In this study, the primary sources of information on PPD mentioned by respondents included family and friends (24.5%) and social media (21.4%). This variation may be attributed to the shared experiences of family members or friends who have encountered PPD. However, it is important to note that family members and friends might hold misconceptions about PPD. The second most common source of information was social media, which is easily accessible to all members of society. These findings are consistent with a previous study conducted in Saudi Arabia, where family and friends were the most frequently cited sources of information (50.7%; Ridha et al., 2019). The variation in the percentage may be due to the larger sample size in the study.

The findings of this study showed that over one-third of the participants (36.9%) reported having come across women with PPD, whereas 15.5% reported that their wives had been diagnosed with PPD. These results are similar to the findings in the study by Ridha et al. (2019), where two-fifths of participants (40.1%) reported knowing someone with PPD, and 15.7% reported an immediate family member being diagnosed with PPD. It is crucial to continue raising awareness about PPD. However, these results contrast with another study where only 6.9% of family members, including husbands, had encountered women with PPD (Poreddi et al., 2020). This difference may be attributed to a lack of recognition of the causes and symptoms of PPD.

In this study, 45.4% of the husbands exhibited a high level of knowledge about PPD. This indicates that a significant percentage of husbands are aware of PPD, which can play a crucial role in recognizing and addressing PPD when it arises and providing the necessary support. This also emphasizes the need for further education and awareness. These results are consistent with previous studies that revealed family members, including relatives and husbands, had good knowledge regarding PPD (Juntaruksa et al., 2017; Poreddi et al., 2020). The present study's findings align with recent studies carried out among the general population (Alsabi et al., 2022; Branquinho et al., 2019).

Regarding the participants' knowledge of the causes and risk factors of PPD, the findings of this study showed that nearly two-thirds (62.8%) were aware that a lack of family support and

poor relationship/marital conflict were risk factors for PP[illegible]his awareness is crucial because it can lead to proactive measures to provide husbands support and address relationship problems during the postpartum period. However, it also emphasizes the need for further education and awareness about other risk factors for PPD. It is important to remember that PPD is a complex condition with multiple contributing factors, and it is essential for husbands to be aware of this and provide support. These findings are in line with previous studies, which have also shown that poor family relationships are a main risk factor for PPD (Branquinho et al., 2019; Juntaruksa et al., 2017; Poreddi et al., 2020).

Furthermore, nearly two-thirds (62.8%) of the participants were aware that increased work pressure and stress were risk factors for PPD. This shows that a large number of husbands are aware of the main causes of PPD, including pressure and stress from work. This result is consistent with a recent study among the public population in Saudi Arabia, which found that 71.8% of participants perceived stress from work and school as the most significant causes of PPD (Alegiry et al., 2021).

This study revealed that the majority of husbands (84.0%) were unaware of the genetic/hereditary factors contributing to PPD. This appeared to be a lack of knowledge among husbands regarding the causes of PPD. One possible explanation for this finding is due to obtaining information about PPD from family and friends. Some previous research has suggested that genetic/hereditary factors can be potential risk factors for PPD (Elwood et al., 2019). This result aligns with the findings of a study by Branquinho et al. (2019), which reported that most participants were unaware of the genetic causes of PPD. In contrast, in earlier studies conducted among family members, more than half of the participants were aware of the genetic causes of PPD (Juntaruksa et al., 2017; Poreddi et al., 2020).

Additionally, the findings of this study showe[illegible]at more than three-quarters of husbands denied that a mother's poor education and disappoin[illegible]t with the gender of the baby were risk factors for PPD. These results differ from another study in which more than half of family members, including husbands, identified a mother's poor education and disappointment with the baby's gender as risk factors for PPD (Poreddi et al., 2020). One possible explanation for this difference is that the participants in the current study may have been satisfied with the gender of the baby, which may lead to neglect of the physical and mental health of these women. Several studies have indicated that disappointment wit[illegible]e baby's gender is indeed a risk factor for PPD and other depressive states. Women have a higher likelihood of developing PPD if their gender preference does not align with that of their family and husband (Rong et al., 2023). Matsumura et al. (2019) established a relationship between education level and risk of PPD. The findings of this study indicate that mothers with lower levels of education had a higher likelihood of developing PPD and related symptoms (Matsumura et al., 2019).

According to the current findings, more than half of the participants did not believe that life crises and a history of depression were leading risk factors for PPD. These results contrast with a study by Juntaruksa et al. (2017), which reported that most husbands perceived life crises and a history of depression as the main risk factors for PPD. Another study found that nearly three-

quarters (72.0%) of the participants believed the most important reason leading to depression was primarily the loss of a relative or loved one (Alegiry et al., 2021). These findings suggest that husbands may have misconceptions about the role of a history of depression as a risk factor for PPD. It is important to consider these findings because women with a family history of PPD have a higher likelihood of developing the condition (Stewart & Vigod, 2019).

In this study, more than three-quarters of husbands (76.3%) disagreed that PPD was caused by being possessed by a ghost, committing sins, or black magic. This result is in line with a study conducted in Thailand by Juntaruksa et al. (2017), where more than half of the husbands disagreed that PPD was caused by ghost possession. These findings indicate that the participants in this study had rational, scientifically supported explanations related to human psychology. Having knowledge about PPD among husbands and family members can help women recognize and address PPD early on. This result is not consistent with previous studies (Manjrekar & Patil, 2018; Poreddi et al., 2020; Ransing et al., 2020), where more than half of the participants believed PPD was caused by ghost possession, sin, or black magic.

Regarding signs and symptoms of PPD, the findings of this study showed that most of the participants correctly identified the prevalent symptoms of PPD, indicating they were aware of the common signs of PPD. These findings align with previous research (Alsabi et al., 2022; Juntaruksa et al., 2017; Poreddi et al., 2020). This is critical for early detection and intervention. However, it is important to continue efforts to raise awareness about PPD, given that understanding and recognizing the symptoms can result in prompt medical attention and improved outcomes for mothers and their families.

Participants' Attitude Toward PPD

The results of this study showed that two-thirds of the participants (66.1%) had a positive attitude in general toward PPD. This suggests a level of empathy and understanding, which can be crucial in providing support to wives experiencing PPD. It also indicates that efforts to raise awareness and educate about PPD may have a positive impact. The findings of the current study are supported by previous studies conducted among family members (Juntaruksa et al., 2017; Poreddi et al., 2020) and the general population (Branquinho et al., 2019). In contrast, Alsabi et al. (2022) found that a significantly negative attitude and negative awareness level of PPD exist among social support networks (including husbands and other family members) for postnatal women.

In the present study, the majority of husbands believed that women with PPD required sympathy and patience, and they were ready to help their relatives or wives if they were diagnosed with PPD. These findings are congruent with the results of a study conducted by Juntaruksa et al. (2017), which reported positive attitudes of relatives, including husbands, toward PPD. Evidence from this research demonstrates that husbands have more positive intentions and attitudes to assist mothers with PPD than other people. This study showed that husbands were more sympathetic and accepting of their spouses/wives, which fosters care, love, and positive relationships between spouses (Juntaruksa et al., 2017).

Concerning the participants' attitudes toward PPD, the results of this study showed that most participants disagreed that women with PPD cannot be good mothers (81.8%) and should stay at home (78%). This demonstrates a favorable change in perceptions and attitudes around PPD, recognizing that it is a treatable disease that has no impact on a woman's capacity to be a good mother. These findings were in line with earlier studies (Alsabi et al., 2022; Juntaruksa et al., 2017). However, this is not in line with a study by Poreddi et al. (2020), which reported that most participants agreed that women with PPD cannot be good mothers (70.8%) and should stay at home (70.3%).

According to our findings, only 8.5% of participants believed that PPD is common among women. This finding suggests there is a significant gap in awareness of PPD. Although PPD is a prevalent disease that affects many mothers worldwide, this perception is not widely recognized. These findings necessitate the need for educational programs to raise awareness about the prevalence of PPD and the need for early detection and treatment. It is important to address misconceptions and provide accurate information about PPD to the husbands and the public. This result is consistent with earlier studies carried out among the general population, which revealed that less than half of the participants believed that PPD was frequent (Alsabi et al., 2022; Branquinho et al., 2019). In contrast, 69.9% of family members, including husbands and females, reported that PPD is common among women in a prior study carried out by Poreddi et al. (2020).

Regarding high risk of suicide, 18.5% of the participants believed that depressive postpartum women have a high risk of suicide. This finding disagreed with a previous study by Poreddi et al. (2020), who reported that 83.1% of family members believed women with PPD have a high risk of committing suicide. One possible explanation for the high percentage of participants not believing that PPD carries a risk of suicide could be according to the rules of Islamic law, which prohibit suicide or self-h This may lead to neglect of suicidal thoughts in women suffering from PPD, which may have an impact on the lives of mothers.

Furthermore, the study results also indicate that more than half (60.9%) of husbands do not feel shame in telling other people that their relatives or wives have PPD. This is a clear indication that husbands have good attitudes and less stigma toward mothers who experience PP t is important to continue promoting this positive attitude and understanding because it can help ensure that women who are experiencing PPD receive the support and treatment they need. These findings seem to be congruent with the findings of Alsabi et al. (2022), who showed that the participants did not feel shame about telling others that their relatives have PPD. This result is contrary to earlier studies carried out among family members, where the findings showed that more than half of husbands or relatives felt shame and did not tell other people that their relatives or wives had PPD (Juntaruksa et al., 2017; Poreddi et al., 2020).

According to the current findings, the participants were inclined to have a neutral attitude regarding whether "postpartum women who have PPD should be treated in the hospital" (40.9%). The reason for these findings may be due to most of the husbands not being ashamed to tell other people that their relatives or wives have PPD, or it could be due to a lack of sufficient knowledge about PPD treatment. Higher levels of knowledge about PPD are linked with a higher intention to

recommend help-seeking (Angermeyer et al. 2017). The study's finding is not in line with a study conducted by Juntaruksa et al. (2017), which revealed that both husbands and female relatives would refer patients to the hospital and had positive attitudes toward PPD therapy.

Association Between Knowledge and Attitude

There was a significant positive correlation between knowledge and attitudes of husbands toward PPD ($p < 0.005$). This suggests that as husbands' knowledge about PPD increases, their attitudes toward it also became more positive. This finding could have important implications for supporting families affected by PPD. When husbands are well-informed about PPD, they may be more empathetic, understanding, and supportive toward their partners who are experiencing it. This could lead to better outcomes for both the mother and the entire family unit. The studies conducted by Poreddi et al. (2020) and Branquinho et al. (2019) support the findings of our study by revealing that husbands with high levels of knowledge scores had positive attitudes regarding PPD.

Similar results were found in the studies carried out by Poreddi et al. (2020) and Branquinho et al. (2019); there was a significantly positive correlation between respondents' knowledge and attitudes related to PPD. This is also congruent with the results of the study conducted by Juntaruksa et al. (2017), which revealed that family members, both husbands and female relatives, had positive attitudes and good knowledge about PPD.

However, this finding disagrees with the study by Alsabi et al. (2022), which presented a significant level of positive knowledge about but negative attitude and awareness level of PPD among social support networks for postnatal women. This discrepancy may be due to differences in the study population, cultural factors, or variations in the way knowledge and attitudes were measured in the respective studies.

Strengths and Limitations

This preliminary study was conducted to explore husbands' knowledge and attitudes toward PPD in Saudi Arabia. An electronic self-administered questionnaire was used to collect a large amount of data through cost-effective approaches. Multiple recruitment methods were employed to reach a large number of participants. Additionally, an online survey format was used to make it convenient for husbands to respond to the questions. However, there are several limitations to this study that should be addressed. First, the study employed a cross-sectional design, providing a snapshot of knowledge and attitudes at a specific point in time. The study's focus on a specific group (husbands) limits the generalizability of the findings to a broader population. Moreover, the study sample mainly consisted of a significant proportion from the western region of the country and highly educated respondents, which may not be representative of husbands throughout Saudi Arabia. Also, there was a limitation of low response rates from social media on the questionnaire. Finally, there is a scarcity of previous research on husbands' knowledge and attitudes regarding PPD, resulting in a lack of literature references.

Conclusions

This is the first nursing study of its kind conducted in Saudi Arabia to assess husbands' knowledge and attitude toward PPD. The study findings demonstrated a good level of knowledge and positive attitudes toward PPD among husbands. However, there are still misunderstandings and negative beliefs related to PPD among some of the participants. The results highlight the importance of developing strategies to improve awareness of PPD for postnatal care and including husbands in health education to recognize early signs and symptoms of PPD. Additionally, there is a need for educational campaigns and interventions to improve knowledge and promote positive attitudes about PPD among husbands and the public.

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Figure 1

Distribution of Participant's According to the Source of Information about PPD (n=401).

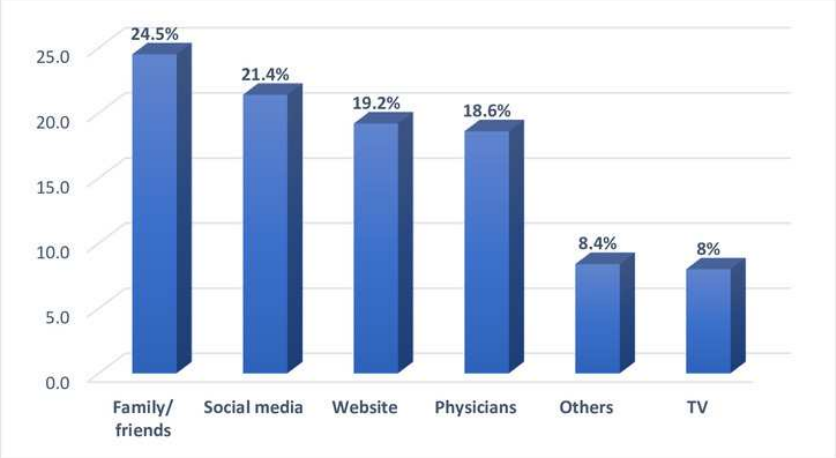

Figure 1: Distribution of Participant's According to the Source of Information about PPD (n=401).

Figure 2

Percentage of Total Knowledge Categories(n=401).

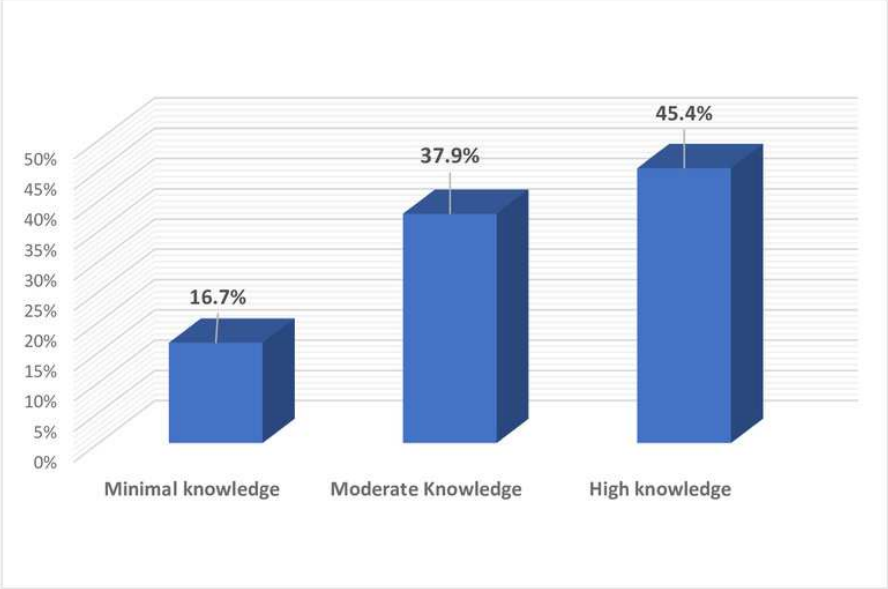
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
16.7%
37.9%
45.4%
Minimal knowledge
Moderate Knowledge
High knowledge

Table 1(on next page)

Socio-Demographics Characteristics of the participants (n=401)

Table 1: Socio-Demographics Characteristics of the participants (n=401). 1

Socio-Demographics Characteristics		Frequencies	%
Nationality	Saudi	359	89.5%
	non-Saudi	42	10.5%
Age	from 20 to <30 years	58	14.5%
	from 30 to <40 years	194	48.4%
	from 40 to <50 years	109	27.2%
	≥50 years	40	10.0%
Region	Western region	297	74.1%
	Southern region	52	13.0%
	Central region	26	6.5%
	Eastern region	19	4.7%
	Northern region	7	1.7%
Education level	Primary school	4	1.0%
	Intermediate school	7	1.7%
	High school	89	22.2%
	Bachelor degree / Diploma	234	58.4%
	Higher than Bachelor degree	67	16.7%
Occupation	Government employee	260	64.8%
	Private /business	106	26.4%
	Free business	24	6.0%
	Not working	11	2.7%
Monthly family Income	Less than 5000 riyals	50	12.5%
	from 5000 to10000 riyals	134	33.4%
	More than 10000 riyals	217	54.1%
Number of years of marriage	from 1 to 3 years	49	12.2%
	from 4 to 6 years	70	17.5%
	More than 6 years	282	70.3%
Number of living children	one	79	19.7%
	two	111	27.7%
	three	78	19.5%
	four	55	13.7%
	five and more	78	19.5%
Age of the youngest child	from 6 months and less	60	15.0%
	from 7 to 12 months	58	14.5%
	from 1 to 2 years	73	18.2%
	More than 2 years	210	52.4%
Gender of the children	Only Males	90	22.4%
	Only Females	78	19.5%
	Both males and females	233	58.1%
Are you satisfied with your children gender	No	7	1.7%

	Yes	394	98.3%

Table 2(on next page)

Husbands' Knowledge about Causes of PPD (n=401).

1 **Table 2: Husbands' Knowledge about Causes of PPD (n=401).**

Causes	No/ Don't know		Yes		Mean	Standard Deviation SD
	N	%	N	%		
1. Genetic/hereditary	337	84.0%	64	16.0%	.16	.37
2. Crisis situation (Death of loved one, loss of job, divorce) in life	224	55.9%	177	44.1%	.44	.50
3. Poor relationship/ marital conflicts	157	39.2%	244	60.8%	.61	.49
4. History of depression	229	57.1%	172	42.9%	.43	.50
5. Lack of family support	139	34.7%	262	65.3%	.65	.48
6. Ghost possessed or doing sin or Black magic *	306	76.3%	95	23.7%	.76	.43
7. lack of confidence in taking care of baby	173	43.1%	228	56.9%	.57	.50
8. Health problem/sickness of baby	182	45.4%	219	54.6%	.55	.50
9. Domestic violence/husband violence	180	44.9%	221	55.1%	.55	.50
10. Older age (more than 20 years) *	295	73.6%	106	26.4%	.74	.44
11. Disappointment with gender of the baby	276	68.8%	125	31.2%	.31	.46
12. Poverty/financial difficulties	197	49.1%	204	50.9%	.51	.50
13. Poor education of the mother	294	73.3%	107	26.7%	.27	.44
14. Increased work pressure/stress	149	37.2%	252	62.8%	.63	.48
15. Personal strength*	314	78.3%	87	21.7%	.78	.41
16. Substance abuse (Alcohol) among husband	200	49.9%	201	50.1%	.50	.50
17. Single mother	189	47.1%	212	52.9%	.53	.50
*** Negatively worded**	**Mean Score: 9.12**		**SD: 4.10**			

2

3

Table 3(on next page)

Husbands' Knowledge about Symptoms of PPD (n=401).

Table 3: Husbands' Knowledge about Symptoms of PPD (n=401).

Symptoms	No/ Don't know		Yes		Mean	Standard Deviation SD
	N	%	N	%		
1. Feeling sad/miserable	94	23.4%	307	76.6%	.77	.42
2. Mother bonding with baby *	228	56.9%	173	43.1%	.57	.50
3. Worry about bonding with baby	180	44.9%	221	55.1%	.55	.50
4. Interested in doing household tasks *	260	64.8%	141	35.2%	.65	.48
5. Interested in talking with others *	304	75.8%	97	24.2%	.76	.43
6. Feeling of fatigue/weakness	128	31.9%	273	68.1%	.68	.47
7. Feeling stressed/anxious	97	24.2%	304	75.8%	.76	.43
8. Loss of interest/pleasure	127	31.7%	274	68.3%	.68	.47
9. Sleeping problems	94	23.4%	307	76.6%	.77	.42
10. Lack of confidence	136	33.9%	265	66.1%	.66	.47
11. Anger	121	30.2%	280	69.8%	.70	.46
12. Weight/appetite changes	115	28.7%	286	71.3%	.71	.45
13. Irritability	117	29.2%	284	70.8%	.71	.46
14. Crying spells for no reason	100	24.9%	301	75.1%	.75	.43
15. Death wishes	177	44.1%	224	55.9%	.56	.50
16. Postpartum depression may occur after birth to 6 months only *	260	64.8%	141	35.2%	.65	.48
***Negatively worded**			**Mean Score:11**		**SD: 3.74**	

Table 4(on next page)

Husbands' Attitudes towards PPD (n=401).

1 **Table 4: Husbands' Attitudes towards PPD (n=401).**

Item	Disagree		Partly agree		Agree		Mean	Standard Deviation
	N	%	N	%	N	%		
1. I feel shame and do not tell anyone that my relative has postpartum depression *	244	60.8%	113	28.2%	44	11.0%	2.50	.69
2. Postpartum women who have postpartum depression cannot be good mothers *	328	81.8%	46	11.5%	27	6.7%	2.75	.57
3. Postpartum women who have postpartum depression should stay at home *	313	78.1%	55	13.7%	33	8.2%	2.70	.61
4. We should be patient and have empathy with the women who have postpartum depression	13	3.2%	21	5.2%	367	91.5%	2.88	.41
5. Postpartum women who have postpartum depression cannot take care of her own children *	188	46.9%	168	41.9%	45	11.2%	2.36	.67
6. Postpartum depression is an uncured disease and will continue increasing in severity *	342	85.3%	34	8.5%	25	6.2%	2.79	.54
7. Postpartum women who have postpartum depression are a pitiable person	237	59.1%	99	24.7%	65	16.2%	1.57	.76
8. I feel it oppressive to take care of a woman who has postpartum depression *	332	82.8%	40	10.0%	29	7.2%	2.76	.57
9. Postpartum women who have postpartum depression cannot make decisions at all *	170	42.4%	169	42.1%	62	15.5%	2.27	.71

10. Postpartum women who have postpartum depression should not have another child *	318	79.3%	58	14.5%	25	6.2%	2.73	.57
11. I am ready to help if my relative has postpartum depression	19	4.7%	27	6.7%	355	88.5%	2.84	.48
12. Postpartum women who have postpartum depression is a burden to the family *	312	77.8%	61	15.2%	28	7.0%	2.71	.59
13. Postpartum women who have postpartum depression should be treated in hospital	136	33.9%	164	40.9%	101	25.2%	1.91	.76
14. Postpartum depression is an alert sign that a postpartum woman needs help from a caregiver	47	11.7%	149	37.2%	205	51.1%	2.39	.69
15. If a woman develops postpartum depression, mother and baby to be separated *	281	70.1%	95	23.7%	25	6.2%	2.64	.60
16. Postpartum depression does not require any treatment *	272	67.8%	106	26.4%	23	5.7%	2.62	.59
17. Postpartum depression is common among women	270	67.3%	97	24.2%	34	8.5%	1.41	.64
18. Breast feeding to be stopped if a woman develops postpartum depression *	128	31.9%	179	44.6%	94	23.4%	2.08	.74
19. Woman with postpartum depression have a high risk of committing suicide*	74	18.5%	150	37.4%	177	44.1%	1.74	.75
*** Negatively worded**				**Mean Score: 45.66~46**		**SD: 3.50**		

Table 5(on next page)

Correlation between Knowledge and Attitudes towards PPD (n=401).

* p-value < 0.05.

Table 5: Correlation between Knowledge and Attitudes towards PPD (n=401).

		Husbands' Attitudes Toward Postpartum Depression
Husbands' knowledge about Postpartum Depression	Pearson Correlation	.117
	Sig. (2-tailed)	.019*

*** p-value < 0.05.**