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The prevalence of depression and generalized anxiety disorder among pregnant women in primary healthcare centers of Al Madinah Al Munawara City 2020-2021

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ABSTRACT

Pregnancy and physiological and psychological variations can impact mental and emotional changes and thereby trigger depression and anxiety in expectant mothers. Being overly concerned about an individual's financial, social, and health issues can promote depression and anxiety among pregnant women. Managing those associated factors during and after pregnancy is crucial. Although several studies reported depression and anxiety disorder in pregnant women, there are limited studies available in Saudi Arabia. Thus, this study measured the prevalence of both depression and anxiety among pregnant women in Al-Madinah Al-Muawarah, Saudi Arabia. A total of 250 surveys were conducted from five primary care centers randomly. A simple stratified sampling technique was used. General Anxiety Disorder-7 (GAD-7) and Patient Health Questionnaire (PHQ-9) were used as research instruments for data collection. Of the seven items from GAD-7, the higher rate related to the response "not at all" for the following items; "Being so restless that it is hard to sit still" by 165 (66.5%) was obtained followed by "Becoming easily annoyed or irritated" 118 (47.2%). Similarly, from the nine items from the PHQ-9, the higher rate response was obtained with "not at all" for the following items; "Thoughts that you would be better off dead, or hurting yourself" by 243 (98.0%), followed the second-highest rate was obtained regarding "Several Days" for the following items; "Trouble falling or staying asleep, or sleeping too much" by 116 (46.8%). The current study is consistent with previous studies.

1. Introduction

The relationship between a pregnant woman and her developing fetus is not only the most earnest and overwhelming but also the most perplexing of all human relationships. Pregnancy entails physiological, hormonal, and psychological changes, which combined can increase the potential for mental and emotional changes, triggering depression, anxiety, or psychological distress in the expectant mother (DiPietro, 2010). Generalized Anxiety Disorder (GAD) is characterized by persistent and excessive worry about a variety of different things. Individuals suffering from GAD may anticipate disaster or become overly concerned about money, health, family, work, or other issues. Consequently, they can find it difficult to control their anxiety. From the perspective of others, they may appear to worry more than seems warranted about actual events, or may expect the worst, even when there is no apparent reason to do so (Torpy et al., 2011).

According to the WHO, depression is a relatively common mental disorder that is more likely to affect women than men. Globally, the WHO reported that more than 264 million people of all ages currently suffer from depression. It is a leading cause of incapacity worldwide and is a major contributor to the overall global burden of disease, with the potential to lead to suicide (WHO, 2021). Depression and anxiety disorders differ; however, people with depression often experience symptoms similar to an anxiety disorder, such as nervousness, irritability, and difficulties sleeping and concentrating. However, each disorder has unique causes and emotional and behavioral symptoms (Ströhle, 2009). Depression and anxiety are the most commonly experienced

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mental health problem during pregnancy, with around 12% of women experiencing depression and 13% experiencing anxiety at some point; notably, many of these women will experience both. Depression and anxiety also affect 15-20% of women in the first year following childbirth. During pregnancy and the postnatal period, anxiety disorders, including panic disorder, GAD, obsessive-compulsive disorder (OCD), post-traumatic disorder (PTSD), and tokophobia (extreme fear of childbirth) can occur in isolation or coexistent with depression. In addition, psychosis can re-emerge or become exacerbated during pregnancy and in the postnatal period.

Between 2006 and 2008 there were 1.27 maternal deaths per 100,000 maternal deliveries in the UK arising as a consequence of mental health problems. Although the level of response to treat women during the neonatal and postnatal period for mental health problems is considered good, they frequently go unrecognized and untreated. If untreated, women can continue to have symptoms, sometimes for many years, which go on to affect their babies and other family members (Anniverno et al., 2013).

Anxiety in response to pregnancy is a very common adaptive response. However, in some cases, for several reasons, mothers can experience excessive worries and a severe (and invalidating) level of anxiety during the perinatal period (Parker, 2015). High anxiety levels during pregnancy have been associated with preterm birth and low birth weight (Schetter and Tanner, 2012), and a range of adverse childhood outcomes, including negative emotionality (Gutteling et al., 2005), attention deficit hyperactivity disorder (Van den Bergh et al., 2005) and developmental delays (Huizink et al., 2003), as well as changes in the volume of grey matter (Buss et al., 2011).

A review of the perceived role of midwives in the context of perinatal mental health screening emphasized that midwives considered the provision of mental health care a vital component of their role (Noonan et al., 2017). Attributable to the high compliance, availability, and reliable mental support of midwives, the literature reports a reduction in anxiety and depression among pregnant women (Brugha et al., 2016; Beattie et al., 2017). However, some barriers exist that inhibit midwives from detecting perinatal mental health issues, such as insufficient knowledge and awareness of antenatal mental issues (Bayrampour et al., 2018).

The aim of this study is to determine the prevalence of both depression and GAD among pregnant women in the Saudi Arabian city of Al Madinah Al Muawarah, so as to detect it and assist them to manage it during the pregnancy period and after labor. The objectives of this study are as follows:

- To determine the prevalence of GAD among pregnant women
- To determine the prevalence of depression among pregnant women
- To determine the prevalence of depression and GAD combined among pregnant
- To assess the factors associated with depression and anxiety in pregnant

2. Literature review

In 2018, a study was completed examining anxiety and depression during pregnancy in women attending a clinic at the University Hospital in the Eastern Province of Saudi Arabia. This was a respective cohort study conducted at the University Hospital of Imam Abdulrahman Bin Faisal University. Anxiety was evaluated using the State-Trait Anxiety Inventory. A complete data set was available for 575 women aged 18–45 and able to speak Arabic or English. The mean EPDS score was 10.5 (SD 5.5). The prevalence of depression was found to be 26.8%. The mean state-anxiety score was 38.4 (SD 11.4) and the mean trait-anxiety score was 38.2 (SD 9.5). The prevalence of anxiety based on the state-anxiety scale was 23.6%, whereas using the trait scale it was found to be 23.9%. The risk proved to be higher among unemployed women with a history of miscarriage and unplanned pregnancy (Alqahtani et al., 2018).

In 2019, a study was conducted exploring the prevalence and determinants associated with pregnancy-related anxiety among pregnant women at less than 24 weeks of pregnancy in Bangalore, Southern India. This study was nested within an ongoing cohort study and included 380 pregnant women, who had a confirmed pregnancy of under 24 weeks without any obstetric complication, and who were availing themselves of antenatal care at a public sector hospital in the city of Bangalore. A pregnancy-related thoughts (PRT) scale was used to screen for anxiety. Out of the 380 pregnant women, 195 (55.7%) were identified as having pregnancy-related anxiety. Lower socioeconomic status, low social support, and depression emerged as the most significant determinants of anxiety (Nath et al., 2019).

In 2018, a study was conducted to examine the prevalence and risk factors associated with anxiety symptoms during pregnancy to estimate the incidence and prevalence of anxiety throughout the three trimesters of pregnancy, in addition to studying the possible risk factors associated with anxiety symptoms. A sample of 385 pregnant women participated in the longitudinal study using the GAD-7 questionnaire. Anxiety prevalence was identified as 19.5% in the first trimester. In the second trimester, it was 16.8%, with an incidence of 0.048%. In the third trimester, it was 17.2%, with an incidence rate of 0.068% (Soto Balbuena et al., 2018).

In 2014, a systemic review study was performed to examine the presence of anxiety disorders during pregnancy. Two reviewers independently extracted relevant data and assessed the methodological

quality of each study evaluated. Relevant studies pertaining to anxiety disorders during pregnancy were included, as determined by diagnostic interview if they reported on prevalence, course, onset, and/or risk factors; maternal, obstetric, or fetal/child outcomes, and/or treatment trial results. MEDLINE, PsycINFO, and CINAHL were searched for in October 2013 to select original research studies published in English, using combinations of the terms pregnancy, prenatal, or pregnancy outcomes; anxiety disorder; and generalized anxiety. Reference lists for the included studies were hand-searched, and a PubMed search for in-process reports was conducted. Fifty-seven reports were included, including 17 reports about generalized anxiety disorder and 18 reports regarding any anxiety disorder (Goodman et al., 2014).

In 2015, a study was performed to review the risk factors contributing to transient and persistent anxiety during pregnancy, including women with singleton pregnancies only. Anxiety symptoms were measured in the second and third trimesters using the state-trait anxiety inventory, respectively (Spielberger et al., 1970). Considering the timing and persistence of symptoms, the following three mutually exclusive subgroups were created for each: Never symptomatic, symptomatic only in the second trimester, and symptomatic at both time points. Separate logistic regression models were used to derive risk factors for each subgroup. Moreover, women with chronic anxiety were distinguished from those with transient symptoms or no symptoms at all by their optimism scores, for which the less optimistic pregnant women experienced a four-fold increased risk of developing anxiety symptoms than more optimistic women. Additionally, high perceived stress, low social support, and previous history of mental health issues were common predictors of chronic anxiety. In the study, partner tension was identified as a significant predictor of anxiety symptoms (Bayrampour et al., 2015). In 2019, a study was performed on Prenatal Depression and the Associated Risk Factors among Pregnant Women in Bangalore, and nested within an ongoing cohort study. The study participants included 280 pregnant women attending antenatal clinics, and the data was collected using a structured questionnaire, which was based in part on the Edinburgh Postnatal Depression Scale (EPDS) to screen for prenatal depression. The proportion of the respondents who screened positive for prenatal depression was 35.7%. The presence of domestic violence was found to impose a five times higher and more highly significant risk of developing prenatal depression among the respondents. Pregnancy-related anxiety and a recent history of catastrophic events were also found to be positive predictors of prenatal depression. The high prevalence of prenatal depression in the present study suggests its significance as a public health problem (Sheeba et al., 2019).

In 2017, a study was performed to identify the Prevalence of Depression among Pregnant Women Attending Antenatal Clinics in Pakistan. Data was collected in the period from January-March 2017 from 300 pregnant women during their antenatal visits to Lady Dufferin Hospital and Jinnah Medical College Hospital, Karachi, Pakistan, applying a random sampling technique. A high 81% prevalence of depression was found to be present among the pregnant women of Karachi. Mild depression was the most prevalent (35.7%), and then moderate (29.0%), severe (11.0%), and least prevalent, which is a very severe form of depression (5.3%). 0.011 was the statistically significant P value. Depression was found to be more prevalent in women of young age, those with lower numbers of parity and gravida, and those living in a joint family system (Jafri et al., 2017).

3. Methodology

This is a cross-sectional survey conducted among pregnant women. The study was conducted in Medina, the capital of the Al Madinah Al Munawara region, located in the western region of Saudi Arabia. The population of Medina is about 2132679.

The study population is pregnant women living in Al Madinah Al Munawara City who attended five selected primary care centers. The inclusion criteria for this study are as follows:

- Pregnant women
- Saudi and non-Saudi
- With or without comorbidities

It is worth saying that pregnant women who receive care in the private sector or at a clinic are excluded from this study.

A sample size of 250 patients was calculated by using the Raosoft sample size calculator based on a 5 % margin of error, and 95 % confidence interval (Raosoft, 2020). Stratified simple random sampling was performed. This involved first stratifying the city of Al Madinah into five clusters according to the Ministry of Health area:

1. King Fahad Hospital area
2. Maternity children hospital area
3. Ohod hospital area
4. Al-Miqat hospital area
5. Al-Madinah General Hospital area

After this, random sampling was performed to select one primary healthcare provider from each area. Finally, the sample size required was then acquired equitably over the five areas. The researcher used an interview-based validated questionnaire first, consisting of socio-demographic data: Age, number of weeks pregnant, level of education, work, family income, marriage years, number of children, and history of miscarriage then will use General Anxiety Disorder -7 (GAD-7) questionnaire and The Patient Health Questionnaire (PHQ-9) questionnaire.

3.1. Generalized anxiety disorder assessment (GAD-7)

This is a seven-item instrument used to measure or assess GAD severity. Each item asks the individual to rate the severity of his or her symptoms over the period of the preceding two weeks. Response options include "not at all," "several days," "More than half the time," and "nearly every day."

- Scoring is determined by assigning the scores 0, 1, 2, and 3, to the response categories "not at all," "several days," "More than half the time," and "nearly every day." Respectively, and then adding together the scores for the seven questions. The total scores range from 0 to 21.
- Interpretation scores of 7 and 8 represent cut-off points for no anxiety disorder and having anxiety disorder respectively. When used as a screening tool, further evaluation is recommended when the score is 10 or greater (Spitzer et al., 2006; Löwe et al., 2008).

3.2. The patient health questionnaire (PHQ)

The PHQ component used the 9-item depression module from the full PHQ. Major depression is diagnosed when 5 or more of the 9 depressive symptom criteria have been found to be present for at least "More than half the time" in the past 2 weeks, and when 1 of the symptoms is depressed mood or anhedonia. Other depression is diagnosed if 2, 3, or 4 depressive symptoms have been present for at least "More than half the time" in the past 2 weeks, where 1 of the symptoms is depressed mood or anhedonia. One of the 9 symptom criteria (thoughts that you would be better off dead or of hurting yourself in some way) counts if present at all, regardless of the duration.

As a severity measure, the PHQ-9 score can range from 0 to 27, since each of the 9 items can be scored from 0 (not at all) to 3 (nearly every day) (Kroenke et al., 2001). The researcher used trained nurses for the data collection. Questions were collected on a voluntary basis and participants were allowed to answer/skip any questions in the instruments. Piloting was conducted before commencing the study to test applicability, feasibility time taken to finish, and the process necessary to conduct the study. The data collected from pregnant women for the pilot study was not included in the research.The data was coded and entered using SPSS software version 23, then the data was analyzed by using appropriate statistical tests.

4. Results

Of the 250 pregnant women, the average age was 30.9±8.3, 107 (42.8%) attended high school, and 87 (34.8%) had a university degree. Almost half of the 113 (45.2%) had been married for less than 5 years, and 83 (33.2%) had been married between 5 and 10 years. More than half, 140 (56.0%) were housewives, 151 (60.4%) reported having never had an abortion, and 131 (52.4%) had a monthly income between 5000-10000 SRY (Table 1).

Table 1: Demographic characteristics of respondents

Variable	N	%
Gestational age		
1-14 weeks	84	33.6
15-27 weeks	88	35.2
28-40 weeks	78	31.2
Educational level		
Elementary education	2	.8
Intermediate education	46	18.4
High school	107	42.8
Bachelor's degree	87	34.8
Postgraduate degree	8	3.2
Occupation		
Employee	108	43.2
Housewife	140	56.0
Marriage duration		
Less than 5 years	113	45.2
From 5 to 10 years	83	33.2
From 11 to 20 years	37	14.8
More than 20 years	17	6.8
Number of children		
No children	63	25.2
1 child	67	26.8
2 children	68	27.2
3 children or more	52	20.8
Abortion		
Never	151	60.4
Once	67	26.8
Twice	28	11.2
3 or more times	4	1.6
Monthly income		
5000 or less	26	10.4
5000-10000	131	52.4
10001-20000	77	30.8
More than 20000	16	6.4
Variable	Mean ± SD	Rang (min-max)
Age	30.9 (8.3)	(17-49)

Of the 7 items from GAD-7, the higher rate related to the response "not at all" for the following items; "Being so restless that it is hard to sit still" by 165 (66.5%), followed by "Not being able to stop or control worrying" by 147 (58.8%), then "Worrying too much about different things" by 146 (58.6%), and "Feeling nervous, anxious or on edge" by 115 (46.2%). Meanwhile, the second highest rate was obtained for "Several Days" in response to the following items; "Trouble relaxing" by 127 (50.8%), followed by "Becoming easily annoyed or irritated" by 118 (47.2%), then "Feeling afraid as if something awful might happen" 111 (44.4%) (Table 2).

Of the 9 items from the PHQ-9, the higher rate response was obtained with "not at all" for the following items; "Thoughts that you would be better off dead, or hurting yourself" by 243 (98.0%), followed by "Moving or speaking so slowly that other people could have noticed" by 224 (90.3%), then "Feeling bad about yourself or that you are a failure" by 160 (64.5%), "Little interest or pleasure in doing things" by 158 (63.5%), "Trouble concentrating on things" by 143 (57.7%) and finally "Feeling down, depressed, or hopeless" by 130 (52.2%). In addition, the second highest rate was obtained regarding "Several Days" for the following items; "Trouble falling or staying asleep, or sleeping too much" by 116 (46.8%), followed by "Feeling tired or having little energy" 107 (43.0%), and then "Poor appetite or overeating" 94 (37.9%) (Table 3).

Table 2: GAD-7 responses

Variable		N	%
Feeling nervous, anxious, or on edge	Not at all	115	46.2
	Several Days	96	38.6
	More than half the time	31	12.4
	Nearly every day	7	2.8
Not being able to stop or control worrying	Not at all	147	58.8
	Several Days	75	30.0
	More than half the time	27	10.8
	Nearly every day	1	.4
Worrying too much about different things	Not at all	146	58.6
	Several Days	71	28.6
	More than half the time	27	10.8
	Nearly every day	5	2.0
Trouble relaxing	Not at all	94	37.6
	Several Days	127	50.8
	More than half the time	23	9.2
	Nearly every day	6	2.4
Being so restless that it is hard to sit still	Not at all	165	66.5
	Several Days	59	23.8
	More than half the time	22	8.9
	Nearly every day	2	.8
Becoming easily annoyed or irritated	Not at all	74	29.6
	Several Days	118	47.2
	More than half the time	47	18.8
	Nearly every day	11	4.4
Feeling afraid as if something awful might happen	Not at all	109	43.6
	Several Days	111	44.4
	More than half the time	25	10.0
	Nearly every day	5	2.0

Table 3: PHQ-9 responses

Variable		N	%
Little interest or pleasure in doing things	Not at all	158	63.5
	Several Days	76	30.5
	More than half the time	12	4.8
	Nearly every day	3	1.2
Feeling down, depressed, or hopeless	Not at all	130	52.2
	Several Days	97	39.0
	More than half the time	20	8.0
	Nearly every day	2	.8
Trouble falling or staying asleep, or sleeping too much	Not at all	63	25.4
	Several Days	116	46.8
	More than half the time	48	19.4
	Nearly every day	21	8.5
Feeling tired or having little energy	Not at all	49	19.7
	Several Days	107	43.0
	More than half the time	67	26.9
	Nearly every day	26	10.4
Poor appetite or overeating	Not at all	53	21.4
	Several Days	94	37.9
	More than half the time	57	23.0
	Nearly every day	44	17.7
Feeling bad about yourself or that you are a failure or have let yourself or your family down	Not at all	160	64.5
	Several Days	77	31.0
	More than half the time	11	4.4
Trouble concentrating on things, such as reading the newspaper or watching television	Not at all	143	57.7
	Several Days	88	35.5
	More than half the time	15	6.0
	Nearly every day	2	.8
Moving or speaking so slowly that other people could have noticed. Or the opposite being so fidgety or restless that you have been moving around a lot more than usual	Not at all	224	90.3
	Several Days	22	8.9
	More than half the time	1	.4
	Nearly every day	1	.4
Thoughts that you would be better off dead, or hurting yourself	Not at all	243	98.0
	Several Days	4	1.6
	More than half the time	1	.4

The median score was GAD-7 and the PHQ-9 total scores were 4 and 6. Where, 201 (80.4%) reported no anxiety, 203 (81.6%) had minimal to mild depression, and 5 (2.0%) had no depression. Regarding problems performing tasks at home or at work, 95 (47.3%) reported: “Not difficult at all,” 83 (41.3%) reported, “Somewhat difficult,” and only 23 (11.4%) reported “Very difficult” (Table 4). There was a significant difference across the GAD-7 score in relation to the variables age, marriage duration, and number of children. That is, older women, those with longer marriage duration, and those who had

more children had a higher score for GAD-7 (p=0.002, p<0.0001, and p<0.0001). Meanwhile, there were no significant differences in GAD-7 scores associated with gestational age, educational level, occupation, previous abortion(s), and monthly income (Table 5).

Table 4: GAD-7 and PHQ-9 total score and category and problems limitation question

Variable	Median	Quartile (25,75)
GAD-7 total score	4	(2,7)
PHQ-9 total score	6	(2,8)
Variable	N	%
GAD-7 category		
No anxiety disorder	201	80.4
Probable anxiety disorder	49	19.6
PHQ-9 category		
No depression	5	2.0
Minimal depression	99	39.8
Mild depression	104	41.8
Moderate depression	33	13.3
Moderately severe depression	8	3.2
Severe depression	0	0
Problems limitation question		
If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people? (n=201)		
Not difficult at all	83	41.3
Somewhat difficult	95	47.3
Very difficult	23	11.4

Table 5: The relationship between GAD-7 and the demographic data

Variable	Median	Mean rank	P-value
Gestational age			
1-14 weeks	4	115.84	0.292
15-27 weeks	5	132.64	
28-40 weeks	5	127.85	
Educational level			
Elementary education	3	116.00	0.955
Intermediate education	5	126.58	
High school	4	123.15	
Bachelor's degree	5	129.25	
Postgraduate degree	3	112.25	
Occupation			
Employee	5	130.25	0.266
Housewife	4	120.07	
Marriage duration			
Less than 5 years	3	103.72	0.0001**
From 5 to 10 years	5	134.34	
From 11 to 20 years	6	158.05	
More than 20 years	6	156.24	
Number of children			
No children	3	95.94	0.0001**
one child	4	126.76	
2 children	5	131.93	
3 children or more	6	151.28	
Abortion			
There is no	4	117.02	0.125
Once	6	141.73	
Twice	5	131.82	
3 or more times	5	129.38	
Monthly income			
5000 or less	3	108.98	0.315
5000-10000	4	122.44	
10001-20000	5	132.02	
More than 20000	6	146.06	
Variable	r		P-value
Age	0.193		0.002*

*: p<0.05; **: p<0.01

There was a significant difference in PHQ-9 scores associated with gestational age and the number of children. That is, those in the third trimester, and those who had more children had a higher score of PHQ-9 (p=0.002, and p=0.008). By contrast, there were no significant differences in GAD-7 scores linked to age, marriage duration, educational level, occupation, previous abortion(s), and monthly income (Table 6).

5. Discussion

Although pregnancy is a joyful event for the majority of women, the prenatal period is often a stressful one, both biologically and psychologically. During this period, vulnerability to emotional and psychological conditions such as depression, anxiety, stress, and psychosis increases, potentially resulting in adverse consequences for the mother and fetus (Sheeba et al., 2019, Keramat et al., 2021, Bante et al., 2021). Worldwide, ~10% of pregnant women experience a mental disorder. Notably, the most common mental disorders in pregnant women are depression and anxiety (WHO, 2008; Biaggi et al., 2016).

The present study was designed to detect the prevalence and assess the risk factors for anxiety and depression among pregnant women in Al-

Madinah, Saudi Arabia. The results revealed that 16.5% and 19.6% of pregnant women attending a PHCC had depression and anxiety respectively. This is consistent with a systematic review including twenty-three studies, which reported that common mental disorders (CMDs) during pregnancy ranged from 1–37% prevalence, and depression and anxiety alone ranged from 1–30% and 1–26% respectively (Jha et al., 2018). Another meta-analysis study that included 66 studies from 30 countries (mainly high-income countries) stated that 9.5% of pregnant women had self-reported co-morbid anxiety and mild to severe depressive symptoms (Falah-Hassani et al., 2016).

Table 6: The relationship between PHQ-9 and demographic data

Variable	Median	Mean rank	P-value
Gestational age			
1-14 weeks	5.2375	106.12	
15-27 weeks	5.6136	122.07	0.002*
28-40 weeks	6.9870	146.57	
Educational level			
Elementary education	4.5000	105.00	
Intermediate education	5.6000	120.39	
High school	6.2762	125.65	0.985
Bachelor's degree	5.6588	125.35	
Postgraduate degree	6.2500	128.63	
Occupation			
Employee	5.4717	115.39	0.115
Housewife	6.2555	129.74	
Marriage duration			
Less than 5 years	5.1727	111.81	
From 5 to 10 years	6.1235	132.78	0.070
From 11 to 20 years	7.8649	142.68	
More than 20 years	5.5882	127.38	
Number of children			
No children	4.5167	97.99	
one child	6.3182	135.64	0.008*
2 children	5.8955	127.48	
3 children or more	7.0769	137.35	
Abortion			
There is no	5.8212	121.17	
Once	6.3871	133.98	0.514
Twice	5.6429	125.05	
3 or more times	4.5000	92.25	
Monthly income			
5000 or less	5.7692	120.92	
5000-10000	6.0635	124.00	0.812
10001-20000	5.8961	128.35	
More than 20000	5.1875	115.81	
Variable	r		P-value
Age	0.058		0.363

*: p<0.05

The current study's results were higher than those reported for a southern Ethiopian study in which the rates of depression, anxiety, and combined depression and anxiety were 11.09%, 4.2%, and 10.04% respectively (Bante et al., 2021), Singapore (5.0%) (Thiagayson et al., 2013), Pakistan 13.5% (Premji et al., 2020), Spain (9.5%) (González-Mesa et al., 2020), and South Africa (7.6% early and 9.7% in late pregnancy) (Niederkrotenthaler et al., 2022). However, this finding is lower than reported in studies conducted in Turkey (47.6%) (González-Mesa et al., 2020), India (55.7%) (Soto Balbuena et al., 2018), Qatar (26.6%) (Naja et al., 2020), and elsewhere in Saudi Arabia (23.6%) and (26.8%) for anxiety and depression respectively (Nath et al., 2019). These differences may be attributable to differences in the study parameters for the pregnancy trimester, geographical setting, the anxiety and depression measurement scales and cut-off points used, the nature of the studies, the sample sizes, and participants' socio-economic status and socio-cultural differences. They may also be related to the quality of maternity care provision, i.e., the midwifery services in each country.

Anxiety was reportedly higher among women older women (p=0.002), those with a longer marriage duration (p<0.0001), and those with more children (p<0.0001). Depression was also higher among women in the third trimester (p=0.002), and those who had more children (p=0.008). Differences may be attributable to the fact that pregnancy induces a variety of hormonal, immunologic, and metabolic changes that exert a substantial influence on a woman's body. Thus, pregnancy can trigger or intensify negative feelings about the body.

Regarding the role of the age factor in anxiety, this may result from the fact that aging is associated with a higher incidence of pregnancy complications, such as preeclampsia, and therefore worry associated with having these complications. Also longer marriage duration and number of children are connected with additional responsibilities. Variations associated with the fetus' gestational age, parental occupation, and monthly income were also noted.

In their research, Keramat et al. (2021) in Iran found higher (worse) depression scores in women of more advanced age (p = 0.001), planned pregnancies (p =0.014), and those who reported satisfaction with their income (p = 0.023). In addition, the higher (worse) anxiety scores were obtained by women who feared losing the fetus (p =0.013), housewives

(p =0.021), and women of more advanced age (p < 0.0001) (Keramat et al., 2021).

Alqahtani et al. (2018) conducted in the Eastern province of Saudi Arabia, reported that depression and anxiety scores were significantly higher among women with a history of previous miscarriages (p < 0.0001 and p=0.004), unemployed women (p= 0.03 and p=0.003), and those having an unplanned pregnancy (p < 0.0001 and p < 0.0001) (Alqahtani et al., 2018).

These findings indicate that preventive methods to minimize depression and anxiety levels among pregnant women must be prioritized by healthcare providers. There should be an awareness of the potential need to refer pregnant women to psychological counseling to assist them in coping during what is a vulnerable time in their lives.

5.1. Limitations of the study

A key limitation of this study was that it was subject to time constraints. That is, the researchers finished the data collection within a period of one month only. Moreover, this study was limited to one region only, Al Madinah Al Munauarah.

6. Conclusion

Based on the findings of this research study, the following can be concluded:

- Fewer than a fifth of individuals experienced an anxiety disorder or depression.
- Anxiety was higher among older women, those with a longer marriage duration, and those who had more children.
- Depression was higher among women in the third trimester and those who had more children.

7. Recommendations

Based on the findings of the research study, the following is recommended:

- Primary health care providers are requested to provide the necessary health education with regard to anxiety and depression during pregnancy for all pregnant women through ANC.
- The midwifery role should be integrated into, and equitably distributed throughout, the community to better identify and manage physiological issues during pregnancy to ensure a healthy and positive experience; and to guarantee the referral of women with complications to specialists.
- Health education messages for pregnant women about anxiety and depression during pregnancy should cover reasons and methods of prevention.
- Administrators in the MOH should aim to deliver health education programs about anxiety and depression during pregnancy in simple language within the community via the mass media to raise public awareness and knowledge regarding PPD.
- Pregnant women should be encouraged to discuss their worries and problems with their doctors.
- Further nationwide studies assessing anxiety and depression during pregnancy need to be conducted across a larger sample size and regions other than Al Madinah Al Munawarah to identify the prevalence and associated risk factors.
- The key points raised in this study should be disseminated to PHCC doctors in training centers, preferably in the form of a written pamphlet about anxiety and depression during pregnancy that can also be distributed to pregnant women.

Compliance with ethical standards

Ethical consideration

This study was approved by the Research Ethical Committee of the General Directorate of Health Affairs of Medina City. After that permission was sought from and granted by each primary health care provider to conduct the interviews. All the participants were informed of their rights to participate or otherwise, and their information was retained confidentially, and only use for this study, and anonymity was preserved.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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