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THE KNOWLEDGE, ATTITUDES, AND PRACTICE OF PRIMARY CARE PHYSICIANS TWARD PERIPARTUM DEPRESSION IN THE EASTERN PROVINCE OF SAUDI ARABIA: 2018

Medicine

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ABSTRACT

Dealing with Peripartum Depression (PPD) in primary care would improve detection and management. This cross-sectional study assessed physicians' knowledge, attitudes, and prac-tice regarding PPD in the Eastern Province. It was conducted on general and family physi-cians in primary health centers in Qatif, Dammam, and Khobar in Saudi Arabia's Eastern Province. Participants self-completed questionnaires electronically. Descriptive statistics, as-sociations, and predictors of practice were determined. Most physicians were not trained in diagnosis or treatment (76.4% and 82.4%, respectively); 76.7% answered correctly regarding PPD treatment; 64.1% regarding screening; and 52.6% regarding diagnosis. More than half (56.3%) perceived PPD negatively and most rarely assessed PPD appropriately. Specialty and training showed statistical significance (p = 0.040, 0.017). Knowledge, attitude, and training in PPD predicted diagnosis ($p = 0.002$). Thus, the participants had average PPD knowledge and substandard practice. PPD knowledge, attitudes, and training in the management thereof predict PPD practice in primary healthcare.

KEYWORDS

Peripartum Depression, Physician, Primary Health Center, Saudi Arabia

Mental disorder is a global health issue. According to World Health Organization, 25% of the world's population experiences mental disorders.[.] It isThese are a common problem in Saudi Arabia, as shown by Alkhatmii study that found that one-third of PHC attendees in Saudi Arabia had a mental illness. Mental illness is a serious medical condition that affects people's life, feelings, and cognition. Moreover, depression is a common mental disorder and one of the main causes of disability worldwide. It is considered burdensome for individuals and their families, including women during pregnancy and the postpartum period.

Peripartum depression or PPD is defined by the DSM-5 as a "major depressive episode with an onset in pregnancy or within 4 weeks of delivery".

PPD occurs in up to one in seven women; it affects 20% of women in developing countries.[1] A narrative review was conducted in 2014 about the prevalence of postnatal depression among Arab women;. The conclusion was that PPD was more prevalent in middle-eastern women, compared to other cultures. PPD's prevalence in Saudi Arabia is at approximately 14%; it is a common mental problem in the Eastern Province.

Although PPD does not have a clear cause, there are well known risk factors such as a history of depression, advanced age, and being female with gestational diabetes. Unstable relationships during marriage, poor social support, and stressful life events are also risk factors.

PPD may present in mothers as lack of energy, a decreased ability to concentrate, increased sleep disturbance,[7] an elevated risk of maternal suicide, a disturbance of maternal-infant bonding, and less healthy family dynamics. PPD has also been found to affect breastfeeding negatively, which is essential for infant development. Women with PPD are also less likely to attend infant wellness clinics and less adherent to safety measures.

The father is affected by PPD because of a disrupted relationship in the peripartum period. PPD may also affect children, resulting in fewer interactions with the mother, more emotional and behavioral issues, poor social relationships with their peers, and more difficulty adjusting to school.[.]

PCPs play an important role in the diagnosis and screening of PPD. A 2013 systematic review emphasized the importance of preventing PPD, due to its feasibility and effectiveness. It was concluded that, despite the increasing prevalence of PPD.. However, the implementation of PPD screening and treatment in primary care is moving at a slow pace. They authors recommend further research in this area.[16]

Several studies have been assessed physicians' knowledge of PPD. In 2013, a study conducted in Cameroon showed that physicians' knowledge regarding depression in general was suboptimal.

Another descriptive study was conducted in 2011 on healthcare professionals working in PHCs in Brazil. . The results showed limited knowledge in assessing depression during the postpartum period.

A cross-sectional 2017 study in Nigeria assessing regarding concluded that PHC physicians had limited knowledge of PPD recognition, diagnosis, and management. In contrast, a 2006 a study concluded that most family physicians knew about the DSM 5 criteria required to diagnose PPD.

Attitudes are a settled way of feeling or thinking about something. In literature reviews, researchers have found several studies addressing attitudes of PCPs towards PPD. A 2015 study showed that most PCPs believed in the importance of PPD. Ninety percent of physicians agreed that it was their responsibility to recognize maternal depression in a 2006 study in southeast Virginia.[24] However, a 2013 study concluded that most physicians generally had negative attitudes towards depression.[21]

PCPs play an important role in managing PPD. PCPs' consideration of PPD as important differs from acting on it; for example, only 40% of family practitioners exposed to PPD patients referred them.[25] Forty percent actually performed the recommended screening for pregnant or postpartum women. Most rarely assessed depression or provided referrals.[24] Most PCPs' PPD practice is inadequate.[21] Evidently, beliefs differ from practice. These results will guide the development of future strategies to increase physicians' awareness regarding PPD.[24]

A 2005, Australian cross-sectional study on GPs and postnatal women aimed to identify ways of improving PPD detection and access to treatment. Both GPs and the women favored help from partners and counseling; however, GPs favored antidepressants and women, natural therapies. Screening for PPD by GPs was found to play a pivotal role in reducing PPD prevalence.

Primary healthcare physicians play an important role in early PPD detection through screening. Screening decreases depression symptoms in women with PPD and PPD prevalence, if appropriately managed.[6] Despite PPD being an easily screened, common mental illness with a highly negative impact, it remains under-diagnosed. Training programs for early detection of PPD are recommended for healthcare providers.[26]

There is a validated PPD test that can be used to screen pregnant women and postpartum. The 10-item Edinburgh Postnatal Depression Scale or "EPDS" has a sensitivity of 59–100% and specificity of 49–100%. The measure has a validated Arabic version.

A 2016 paper systematically reviewed the benefits of PPD screening and treatment, while measuring the accuracy of screening instruments. The study concluded that PPD screening may reduce depressive symptoms in women and depression prevalence in a given population.[6]

Another systematic review of articles from the US, Australia, UK, Netherlands, and Canada showed that UK GPs knew of and used screening tools more than those in the US. Antidepressants were their first choice for PPD treatment. The authors concluded that data on GPs' awareness and management of perinatal depression were sparse and unlikely to be generalizable, proposing directions for future research and recommending more training to improve screening and management practices.[33]

Rationale
No previous studies in Saudi Arabia have specifically assessed knowledge, attitudes, and practices of PCPs towards PPD. Such research would steer PCPs' focus towards early PPD detection and management, and raise their awareness of such cases.

Research Question
What are the knowledge, attitudes, and practice of PCPs towards PPD in the Eastern Province of Saudi Arabia?

Aim
To assess the knowledge, attitudes, and current practices of PCP's toward PPD detection and management in primary healthcare centers in the Eastern Province of Saudi Arabia.

Objectives
1- To assess PCPs' knowledge regarding PPD detection and management.
2- To assess PCPs' attitudes toward PPD detection and management.
3- To determine PCPs' perceptions regarding practice of PPD detection and management.
4- To assess PPCs' willingness regarding future training in the area of PPD.

Methodology
Study Design
A cross-sectional descriptive study.

Study Setting , Time and population
This study was conducted in the MOH's PHCs in Qatif, Dammam, and Khobar cities of Saudi Arabia from October 2017 to June 2018. All physicians were included.

Sampling Technique and Sample Size
All physicians working in 74 PHCs in the sampled cities, who met the inclusion criteria, were included. There were a total of 347 physicians:

Inclusion Criteria
Eligible GPs and family physicians employed at PHCs in Qatif, Dammam, and Khobar during the study.

Exclusion Criteria
- Dentist at PHCs.
- Any primary healthcare physician performing purely administrative work.

Pilot Study
A pilot study was done on 40 physicians was done to test the reliability of the study which showed(α 0.7).

Data Collection Tools and Methods
An electronic self-administrated, structured questionnaire was e-mailed to all PCPs, reinforced through WhatsApp massages. The researchers followed up with the PCPs to ensure good response and address any questions.

Tools Used
Modified structured questionnaires24 validated by 6 consultants, comprising five parts:
1. Socio-demographic participant data.
2. Participants' knowledge was assessed through nine true/false questions. .
3. Participants' attitudes were assessed by 12 questions on a 5 point Likert scale. .
4. Practice was assessed through 11 questions on a 5-point Likert (never, rarely, monthly, weekly, and daily),
5. Physicians were asked about their most preferred method for future training in the PPD area.

Coding and Scoring of the Questionnaire
- Responses to knowledge questions were coded as follows: *True* = 1; *False* and *I don't know* = 0.
- Responses to attitude-related items were coded as follows: *Agree* and *Strongly agree* = 1; *Neutral* = 2; *Disagree* and *Strongly disagree* = 3. The total attitude score was calculated and divided according to the mean to indicate either a positive (Agree and *Strongly agree*) or negative (*Neutral*, *Disagree*, and *Strongly disagree*) attitude. The mean attitude score was 5.94.
- Practice questions were coded as follows: *Never* and *Rarely* responses were coded as 1, *Monthly* as 2, *Weekly* and *Daily* as 3. Total practice and mean total practice were then calculated.

Data Analysis and Management
- In total, 222 questionnaires were checked, coded, and entered into a personal computer, and the data analyzed using SPSS version 16.
- Continuous data were presented as means and standard deviations, and categorical as frequencies and percentages.
- The *t*-test and ANOVA test were used to determine the association of physicians' characteristics with knowledge and practice scores.
- A chi-square test was used to test the association of attitude (positive or negative) with physicians' characteristics.
- The correlation coefficient (*r*) was identified for all variables and linear regression used to determine predictors of knowledge, attitude, and practice.
- The selected alpha level was .05 and significance determined by *p*-value < .05

The study was conducted after institutional review board approval and acceptance

Results
The response for this study was 222 participants from 347 recruits, yielding a response rate of 64%; 23 participants were excluded because they did not complete the survey.

Characteristics of PHC Physicians

Table 1: Characteristics of Physicians in PHCs in Qatif, Dammam, and Khobar, 2018

		N	(%)	Total (*n*) (%)
Gender				
	Male	62	31.2	
	Female	137	68.8	199 (100%)
Nationality				
	Saudi	179	89.9	
	Non-Saudi	20	10.1	199 (100%)
Marital Status				
	Married	170	85.4	
	Single	21	10.6	
	Separated	8	4	199 (100%)

Specialty			
General physicians	131	65.8	
Family physicians	61	30.7	
Other	7	3.5	199 (100%)
Sector			
Qatif	74	37.2	
Dammam	88	44.2	
Khobar	37	18.6	199 (100%)
Any administrative work			
Yes	69	34.7	
No	130	65.3	199 (100%)
Years providing healthcare services			
<2	31	15.6	
2–5	68	34.2	
6–10	57	28.6	
11–15	23	11.6	
16+	20	10.1	199 (100%)
I received training on diagnosis of maternal depression			
Yes	47	23.6	
No	152	76.4	199 (100%)
I received training on treatment of maternal depression			
Yes	35	17.6	
No	164	82.4	199 (100%)

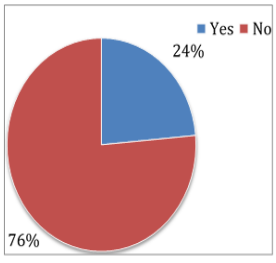

Figure 1: Received training on diagnosis of maternal depression

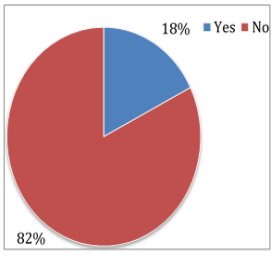

Figure 2: Received training on treatment of maternal depression

Description of PHC physicians' knowledge

Table 2: Knowledge of PHC physicians in Qatif, Dammam, and Khobar, 2018

		Knowledge *Total knowledge Mean 5.12 ± SD 1.88*		Frequency *N* (%)
Diagnosis	1	When PPD can be diagnosed	True	52 (26.1%)
			False	147 (73.9)
	2	History of depression and adolescent pregnancy are not risk factors	True	169 (84.9)
			False	30 (15.1)
	3	PPD can be diagnosed by DSM 5	True	93 (46.7)
			False	106 (53.3)
Screening	4	It is a weak recommendation for screening	True	148 (74.4)
			False	51 (25.6)
	5	There is an available tool for screening	True	107 (53.8)
			False	92 (46.2)
Treatment	6	PPD can be treated through psychotherapy, medication, or both	True	162 (81.4)
			False	37 (18.6)
	7	PPD should be treated through psychotherapy only	True	149 (74.9)
			False	50 (25.1)
	8	SSRI is a drug of choice	True	112 (56.3)
			False	87 (43.7)
	9	Treatment of PPD improves health outcome	True	187 (94)
			False	12 (6)

Table 2 shows that only 26.1% of participants knew when PPD could be diagnosed. Most (84.9%) were aware of PPD risk factors. More than half (74.4%) thought that there is a strong recommendation for screening. %). Most (81.4%) believed that PPD can be treated with psy-chotherapy, medication, or both.

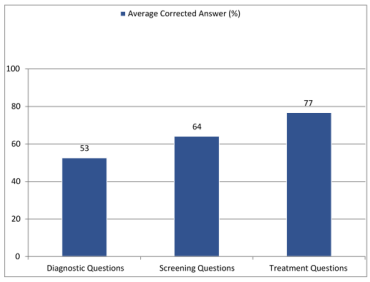

Figure 3: PHC physicians' answers to knowledge items

Figure 3 shows that half of the participants (52.6%) obtained correct answers for diagnosis items. Correct answers for screening questions made up 64.1% and those for treatment ques-tions made up approximately three quarters (76.7%).

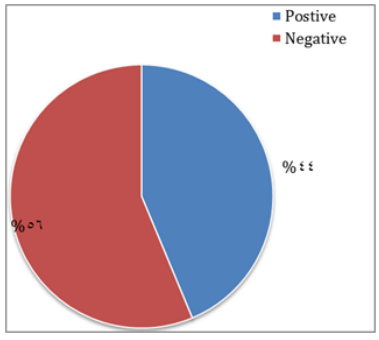

Figure 4: PHC physicians' attitudes toward PPD

PHC physicians' practice

Table 3: Practice of PHC physicians in Qatif, Dammam, and Khobar, 2018

	Questions	Never / Rarely *N* (%)	Monthly *N* (%)	Weekly / daily *N* (%)	Mean	*SD*
1	Perform recommended assessment for maternal depression	152 (76.4%)	20 (10.1%)	27 (13.6%)	0.37	0.71
2	Refer suspected cases of maternal depression for specialist care	166 (83.4%)	20 (10.1%)	13 (6.5%)	0.23	0.56
3	Manage maternal depression through counseling in the clinic	163 (81.9%)	19 (9.5%)	17 (8.5%)	0.27	0.61
4	Manage maternal depression through counseling in the office by senior colleagues or family physicians	168 (84.4%)	15 (7.5%)	16 (8%)	0.24	0.59
5	Manage maternal depression through counseling in office by an MH specialist	172 (86.4%)	16 (8%)	11 (5.5%)	0.19	0.51
6	Treat maternal depression by prescribing medication	185 (93%)	9 (4.5%)	5 (2.5%)	0.09	0.37
7	Manage maternal depression by referring to an MH specialist off site	168 (84.4%)	19 (9.5%)	12 (6%)	0.21	0.54
8	Manage maternal depression through community support groups	178 (89.4%)	8 (4%)	13 (6.5%)	0.17	0.52

9	Providing written information on depression to manage cases of maternal depression	177 (88.9%)	12 (6%)	10 (5%)	0.16	0.49
10	Providing advice on behavior changes	127 (63.8%)	26 (13.1%)	46 (23.1%)	0.59	0.84
11	Avoiding getting involved in the management of such cases	172 (86.4%)	10 (5%)	17 (8.5%)	0.22	0.59

As Table 3 shows, most participants had rarely engagged practice related tomaternal depres-sion cases. Seventy-six percent had rarely recommended assessment of maternal depression and 83.4% had rarely referred suspected cases for specialist care.

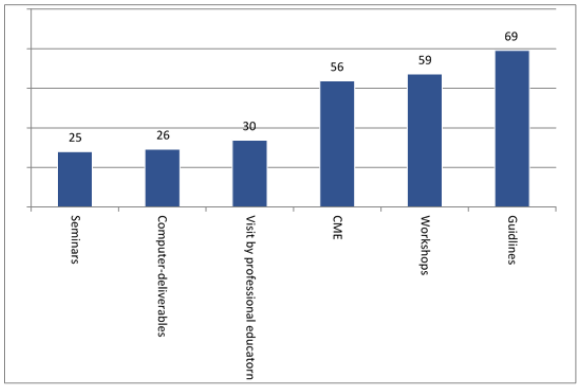

Figure 5: Most preferred method for receiving information

Figure 5 shows that participants' most preferred methods for receiving information were guidelines and workshops

Table 4: Association of PHC physicians' characteristics with knowledge, attitude, and practice scores

		Knowledge		Attitude		Practice	
	Mean ± SD	*p*-value	Negative attitude *N* (%)	Positive attitude *N* (%)	*p* -value	Mean ± *SD*	*p*-value
Age							
≤34 y	4.96 ± 1.9	.102*	81 (72.3)	56 (64.4)	.229***	3 ± 4.8	.480*
>34 y	5.4 ± 1.8		31 (27.7)	31 (35.6)		3 ± 4.2	
Gender							
Male	5 ± 2.0	.425*	37 (33.0%)	25 (28.7)	.516***	2 ± 3.7	.29*
Female	5.2 ± 1.9		75 (67.0)	63 (71.3)		3 ± 4.6	
Nationality							
Saudi	5 ± 2.0	.085*	101 (90.2)	78 (89.7)	.903***	3 ± 4.5	.665*
Non-Saudi	6 ± 1.4		11 (9.8)	9 (10.3)		2 ± 3.4	
Marital status							
Married	5 ± 1.7	.003**	96 (85.7)	74 (85.1)	.476***	3 ± 4.4	.920**
Single	4 ± 2.5		2 (1.8)	4 (4.6)		2 ± 4.6	
Separated	3 ± 1.7		14 (12.5)	9 (10.3)		2 ± 2.7	
Specialty							
General physicians	4.6 ± 1.8	.000**	91 (81.2)	40 (46.0)	.000***	2 ± 3.9	.000**
Family physicians	6.3 ± 1.3		18 (16.1)	43 (49.4)		4 ± 4.6	
Others	5 ± 2.2		3 (2.7)	4 (4.6)		6 ± 7.6	
Sectors							
Qatif	5.2 ± 2.0	.293**	42 (37.5)	32 (36.8)	.875***	2 ± 3.8	.554**
Dammam	5.18 ± 1.6		48 (42.9)	40 (46.0)		3 ± 4.3	
Khobar	4.7 ± 2.3		22 (19.6)	14 (17.2)		3 ± 5.4	
Any administrative work							
Yes	5.7 ± 1.7	.004*	35 (31.2)	34 (39.1)	.250	3 ± 4.9	.209
No	4.8 ± 2.0		77 (68.8)	53 (60.9)		2 ± 2.4	
Years providing healthcare services							
<2	4.9 ± 1.8	.061**	19 (17.0)	12 (13.8)	.195***	2 ± 3.8	.804**
2–5	4.7 ± 2.0		45 (40.2)	23 (26.4)		3 ± 4.6	
6–10	5.5 ± 1.7		27 (24.1)	30 (34.5)		3 ± 4.2	
11–15	5.6 ± 1.6		12 (10.7)	11 (12.6)		4 ± 4.2	
16+	5.3 ±2.1		9 (8.0)	11 (12.6)		2 ± 5.0	
I received training in diagnosis of maternal depression							
Yes	6.7 ± 8.9	.000*	8 (7.1)	39 (44.8)	.000***	4 ± 4.9	.025*
No	4.6 ± 1.8		104 (92.9)	48 (55.2)		2 ± 4.1	
I received training in treatment of maternal depression							
Yes	6.6 ± 0.89	.000*	4 (3.6)	31 (35.6)	.000***	5 ± 5.2	.003*
No	4.8 ± 1.9		108 (96.4)	56 (64.4)		2 ± 4.0	

* *T*–test
** ANOVA
***Chi–square

This study showed thatphysicians' specialties and receiving training in diagnosis and treat-ment of maternal depression had a significant effect on the total knowledge score ($p = .000$).

Table 4 shows that physician specialty had significant effect on attitude; ($p = .000$). Receiving training in both diagnosis and treatment of maternal depression had a significant effect on at-titude ($p = .000$, .000).

Physician specialty had a significant effect on practice ($p = .005$). Further, physicians' training in the diagnosis and treatment of maternal depression had a significant effect on prac-tice ($p– = .025$, .003) .

Table 5: Correlations between PCP characteristics and knowledge, attitudes, and prac-tice, 2018

		Age in years	Gender	Nationality	Marital status	Specialty	Sector	Any administrative work	Years providing healthcare services	Training in diagnosis	Training in treatment	Knowledge	Attitude	Practice
Age in years	PC	1	-.120	.496**	-.154*	.034	-.088	-.112	.774**	.013	-.004	.078	.132	-.039
	Sig		.091	.000	.030	.633	.215	.116	.000	.854	.957	.274	.062	.582
	N	199	199	199	199	199	199	199	199	199	199	199	199	199
Gender	PC	-.120	1	.044	.012	.059	.037	-.080	.001	.144*	.140*	.057	.083	.143*
	Sig	.091		.533	.868	.406	.603	.263	.987	.042	.049	.425	.246	.043
	N	199	199	199	199	199	199	199	199	199	199	199	199	199
Nationality	PC	.496**	.044	1	-.060	-.014	-.007	-.002	.310**	-.147*	-.111	.123	.100	-.031
	Sig	.000	.533		.403	.847	.927	.974	.000	.039	.120	.085	.162	.665
	N	199	199	199	199	199	199	199	199	199	199	199	199	199

Marital status	PC	-.154*	.012	-.060	1	-.102	.085	.018	-.219**	-.116	-.041	-.239**	-.104	-.028
	Sig	.030	.868	.403		.153	.233	.799	.002	.101	.562	.001	.143	.690
	N	199	199	199	199	199	199	199	199	199	199	199	199	199
Specialty	PC	.034	.059	-.014	-.102	1	.027	-.128	.151*	.508**	.421**	.382**	.348**	.094
	Sig	.633	.406	.847	.153		.701	.072	.033	.000	.000	.000	.000	.187
	N	199	199	199	199	199	199	199	199	199	199	199	199	199
Sector	PC	-.088	.037	-.007	.085	.027	1	.119	-.175*	-.053	-.027	-.096	-.036	.076
	Sig	.215	.603	.927	.233	.701		.093	.013	.454	.703	.179	.613	.285
	N	199	199	199	199	199	199	199	199	199	199	199	199	199
Any administrative work	PC	-.112	-.080	-.002	.018	-.128	.119	1	-.255**	-.241**	-.107	-.204**	-.070	-.089
	Sig	.116	.263	.974	.799	.072	.093		.000	.001	.132	.004	.329	.209
	N	199	199	199	199	199	199	199	199	199	199	199	199	199
Years providing healthcare services	PC	.774**	.001	.310**	-.219**	.151*	-.175*	-.255**	1	.190**	.144*	.154*	.199**	.052
	Sig	.000	.987	.000	.002	.033	.013	.000		.007	.042	.030	.005	.469
	N	199	199	199	199	199	199	199	199	199	199	199	199	199
Training in diagnosis	PC	.013	.144*	-.147*	-.116	.508**	-.053	-.241**	.190**	1	.769**	.471**	.471**	.159*
	Sig	.854	.042	.039	.101	.000	.454	.001	.007		.000	.000	.000	.025
	N	199	199	199	199	199	199	199	199	199	199	199	199	199
Training in treatment	PC	-.004	.140*	-.111	-.041	.421**	-.027	-.107	.144*	.769**	1	.366**	.439**	.262**
	Sig	.957	.049	.120	.562	.000	.703	.132	.042	.000		.000	.000	.000
	N	199	199	199	199	199	199	199	199	199	199	199	199	199
Knowledge	PC	.078	.057	.123	-.239**	.382**	-.096	-.204**	.154*	.471**	.366**	1	.494**	.238**
	Sig	.274	.425	.085	.001	.000	.179	.004	.030	.000	.000		.000	.001
	N	199	199	199	199	199	199	199	199	199	199	199	199	199
Attitude	PC	.132	.083	.100	-.104	.348**	-.036	-.070	.199**	.471**	.439**	.494**	1	.261**
	Sig	.062	.246	.162	.143	.000	.613	.329	.005	.000	.000	.000		.000
	N	199	199	199	199	199	199	199	199	199	199	199	199	199
Practice	PC	-.039	.143*	-.031	-.028	.094	.076	-.089	.052	.159*	.262**	.238**	.261**	1
	Sig	.582	.043	.665	.690	.187	.285	.209	.469	.025	.000	.001	.000	
	N	199	199	199	199	199	199	199	199	199	199	199	199	199

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
PC = Pearson's Correlation, Sig = Sig. (2-tailed)

The results show that specialty had a moderate significant correlation (p = .000, .000) with training in diagnosis and treatment. Years of providing healthcare services and specialty shared moderate significant associations with knowledge and attitude (p = .030, .005, .000, and .000, respectively). The relationships between training in diagnosis and treatment with knowledge, attitude, and practice were significantly moderate to weak (p = .000, .000, .025, .000, .000, and .000, respectively). There were significant moderate correla-tions between knowledge, attitude, and practice (p = .000, .001, .000, .000, .001, and .000, respectively).

Table 7: Multiple regression analysis of knowledge, attitude, and practice, 2018.

Model	Knowledge				Attitude				Practice			
	Unstandardized Coefficients	Sig.	95.0% Confidence Interval for B		Unstandardized Coefficients	Sig.	95.0% Confidence Interval for		Unstandardized Coefficients	Sig.	95.0% Confidence Interval for	
	B		Lower Bound	Upper Bound	B		Lower Bound	Upper Bound	B		Lower Bound	Upper Bound
Age	-.012	.723	-.076	.053	.026	.590	-.069	.121	-.085	.348	-.262	.093
Gender	-.171	.477	-.644	.302	.041	.908	-.661	.744	.913	.169	-.392	2.217
Nationality	1.061	.013	.223	1.899	.648	.312	-.612	1.908	-.838	.483	-3.192	1.515
Marital status	-.644	.005	-1.095	-.193	.160	.644	-.522	.842	.021	.974	-1.252	1.294
Specialty	.504	.039	.025	.982	.387	.287	-.328	1.102	-.508	.454	-1.844	.828
Sector	-.188	.216	-.487	.111	-.024	.917	-.468	.421	.659	.116	-.165	1.483
Administrative work	-.424	.080	-.900	.052	.530	.142	-.178	1.237	-.638	.344	-1.963	.687
Healthcare services	-.123	.440	-.436	.191	.094	.690	-.371	.559	.425	.334	-.441	1.291
Diagnosis training	1.265	.005	.389	2.142	1.334	.047	.020	2.647	-2.762	.027	-5.206	-.317
Treatment training	-.261	.567	-1.160	.637	.823	.223	-.505	2.151	3.567	.004	1.134	6.001
Knowledge	.	.	.	.	.429	.000	.224	.634	.413	.041	.018	.809
Attitude	.195	.000	.102	.288	.	.	.	.	.281	.039	.014	.547
Practice	.054	.041	.002	.106	.081	.039	.004	.157	.	.	.	.

Regression analysis showed that specialty, training in diagnosis, attitude, and practice are predictors of knowledge (p = .039, .005, .000, and .041, respectively). Training in diagnosis, knowledge, and practice were predictors of attitude (p = .047, .000, .038). Furthermore, training in diagnosis and treatment, knowledge, and attitude were predictors of practice (p = .027, .004, .041, and .039, respectively).

Discussion

Recognition of PPD as a mental health issue has resulted in worldwide concern regarding its management in primary healthcare facilities[3] to prevent possible harm to individuals and in communities.[4] To facilitate better, understanding of management of maternal depression in these facilities, the present study assessed PCPs' (i.e., general physicians, family medicine practitioners, and others) current knowledge, attitudes, and practice toward maternal depression.

Most of the participants (67.6%) were general physicians; 30.7% were family physicians. This result is higher than a previous national study which showed only 10% of the physicians working in PHC's were family physicians. The discrepancy is mainly due to the current study being conducted in the Eastern Province, where there is a postgraduate family medicine training center. The above-mentioned study included most Saudi Arabian regions, including urban areas.

Most participating physicians did not train in the diagnosis or treatment of PPD (76.4% and 82.4%, respectively). This result is consistent with Qureshi's study, showing that very little training was devoted to PCP in the mental health field.

The current study showed that participants had good knowledge of treatment and screening, which could be attributed to the majority of participants being newly graduated, with good undergraduate psychiatric training. A fair level of knowledge on diagnosis (52.6%) could be due to GPs are working in a high-volume PHC clinic and

lacking the time to update their knowledge.[37] This percentage is lower than that in a study on GPs in Australia, with a total knowledge score of 66 out of 100 and 95% of participants knowing how to diagnose maternal depression.

Furthermore, in this study 56.3% of participants knew that SSRI is the drug of choice for maternal depression treatment; this result is higher than that in another study, wherein only 26.3% knew which drug to treat depression. This difference is due to that study having included GPs, nurses, pharmacists, and social workers, whereas the current one included PCPs.

In the current study, most respondents (56.3%) had negative attitudes toward PPD, possibly due to the high number of untrained physicians. There was a highly significant association between physicians' attitudes and receiving training in both diagnosis and treatment of maternal depression ($p = 0.00$). This is similar to a study conducted in the Dammam PHC sector, which concluded that physician training would positively affect attitudes toward mental health problems.[36]

Nonetheless, most respondents in the current study believed that it is their responsibility to recognize, treat, and refer suspected cases to appropriate professionals, although their number is much lower than those international studies.[24] Moreover, PCPs admit responsibility for dealing with maternal depression cases.

The lack of confidence coincides with the high number of untrained physicians in our sample. Physicians in international studies displayed much more confidence.[24]

Most participants (76%) had rarely performed proper assessment of maternal depression, wherxeas this figure was at 40% for PCPs in Leiferman's study. The difference is attributable to the varying physicians' qualifications.[24]

In the current study, 83.4% of physicians had rarely referred cases to a mental specialist, possibly due to their dissatisfaction with the referral system, lack of coordination between primary care settings and mental health specialists or the system strategy. Koeing's study showed PCPs' under-diagnosis of maternal depression in KSA to be 90%.

Around 81.9% of participants had rarely managed mental depression through counseling, unlike in Liferman's study, where 70% of family physicians had managed depression through counseling. The reason may be the different study settings and the failure to incorporate the counseling in general practice and family medicine into PCP training.[24]

The current study showed that training in the diagnosis and treatment of maternal depression was significantly associated with knowledge, a positive attitude, and practice, similar to national[34] and international studies.[24] Therefore, training seemingly improves physicians' confidence, skills, and personal relationships.

Knowledge, attitudes, and practice were highly associated with family physician specialty in our study. This could be explained by the content of postgraduate training.

This study also showed that knowledge improves practice.[41] Training in diagnosis and treatment are predictors of practice,[36] while training in diagnosis and practice are predictors of attitude. Surprisingly, this study showed that training in the treatment of PPD is not a predictor for knowledge and attitude; this could be attributable to PCPs not considering PPD management their role.

Conclusion

This study showed that PCPs in PHCs in the Eastern Province in Saudi Arabia have average knowledge and conduct sub-standard practice of PPD. Further, knowledge, attitude, and training in management are predictors of practice relating to PPD in primary healthcare settings.

Recommendations

- Improve coordination between PHC and access to mental healthcare.
- Train PHC physicians on PPD recognition, diagnosis, and management.
- Initiate a national program to prevent, screen, and manage PPD.
- Establish national guidelines for dealing with PPD cases.
- Provide PHC settings with resources (e.g., medication, screening tools, CBT, social workers, psychologists, and referral access) to support PPD management.
- Run workshops in PHCs, dealing with PPD diagnosis, screening, and management.
- Increase opportunities for unqualified physicians to receive training in family medicine.

Study strengths

According to the researcher's knowledge, this study is the first in Saudi Arabia to assess knowledge, attitudes, and perceptions of practice regarding PPD, as well as factors affecting physicians' practice regarding PPD's early detection and management in primary healthcare settings.

Limitations

This study was conducted in specific regions in the Eastern Province and the findings cannot be generalized to other rural areas of the kingdom.

The response rate was low (66 %), possibly due to busy clinics during the study period, when questionnaires for other research were being distributed (to fulfill the requirements of Saudi commissions).

Barriers to PPD management were not assessed in this study.

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List of Abbreviations

PPD	**Peripartum Depression**
EPDS	**Edinburgh Postnatal Depression Scale**
GP	**General Practitioner**
US	**United States**
UK	**United Kingdom**
DSM-5	**Diagnostic and Statistical Manual of Mental Disorders 5**
DSM-IV	**Diagnostic and Statistical Manual of Mental Disorders 4**
MH	**Mental Health**
CME	**ContinuingMedical Education**
SPSS	**Statistical Package for the Social Sciences**
PHC	**Primary Health Center**
PCP	**Primary Care Physician**
CBT	**Cognitive Behavioral Therapy**
MOH	**Ministry of Health**

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