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Original Article

Hospital-based Cross-sectional Study on Demographic Aspects of Hormonal Contraception Use and its Association with Depression Among Somali Women in Mogadishu

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ABSTRACT

Though hormonal contraception is known to precipitate depression in some women, it is a successful public health initiative and has numerous personal and community advantages. It contributes to reducing unsafe abortions and maternal and child mortality. The purpose of this study was to assess the prevalence of depression among women who use the hormonal contraceptive (HC) method in Mogadishu, which at times led to circumstances for discontinuation of the contraceptives. A hospital-based cross-sectional study was conducted among women who use HCs and attend a tertiary Benadir mother-and-child hospital and a Somali-Sudanese hospital in Mogadishu, Somalia, from August 2022 to December 2022. The data were collected using Patient Health Questionnaire-9 (PHQ-9). Data were analysed in both descriptive and inferential statistics such as percentage, t-test, analysis of variance, and binary as well as multiple logistic regression. On the HC usage characteristics, 43.6% of the participants have been on Jadelle Implants (a levonorgestrel-releasing implant), with a significance, while only 18.1% use pills (progestin and oestrogen), and the rest used Norplant capsules. In evaluating the physiological side effect incurred by respective HC, 39.6% of respondents were taking anti-depression therapy with a comparative significance, 78.9 were in overall good health, while 21.1% of participants were in poor health. Based on PHQ-9 majority of the respondents (26.9%) had moderate depression, and thirteen (13.1%) had minimal depression, fifty (22.0%) had mild depression. Yet, 43 (18.9%) experienced moderate depression, while another 43 (18.9%) had severe depression. Female housewives were 1.91 times more at risk of any form of depressive disorder than those who are employed. Respondents who had more than $600 were 0.45 times less likely to develop depression compared to those who had less than $600. However, women who used implants (Jadelle) and pills were more likely to develop depression

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with a p-value of 2.4x10-2 and 1.40x10-2, respectively, than those who used Norplant, respectively. In addition, women who use HCs for one year and more/over are less likely to develop depression compared to those who use HCs for more than 3 months and 6 months, respectively. In conclusion, housewives, low-income level, type of HC, and long duration of HCs were the determinants of depression. As a result, women should be aware of the Hormonal Contraceptives' side effects related to depression and seek the advice of doctors or other medical professionals.

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INTRODUCTION

Despite the fact that no technique of contraception is completely free of adverse effects, hormonal contraception is a successful public health initiative and has numerous personal and community advantages. It contributes to reducing unsafe abortions and maternal and child mortality. Also is multifaceted and not only associated with family planning prophylactic methods (Ehsanpour *et al*., 2012; Pinto-Meza *et al*., 2005). In addition, as a successful public health initiative, family planning has numerous personal and community advantages. It contributes to reducing unsafe abortions, population growth, and maternal and child mortality - an important Millennium Development Goal - without restricting the couple's rights to avoid conception, the capacity to schedule when they want to start and stop having children, and the ability to choose the gaps between births (Prata, 2007; Albawardi *et al*., 2022). Modern and dependable contraception methods, such as the Pill as well as improved healthcare and hygiene, reduce infant mortality (New Zealand family planning, 2022). Over 200 million women utilise systemic hormonal contraception in some capacity (Martell *et al*., 2023; Fruzzetti & Fidecicchi, 2020). Hormonal or nonhormonal birth control methods are both available. Barriers (male and female condoms), mechanical (copper intrauterine devices, or IUDs), natural (fertility awareness-based treatments), and surgical techniques are among the nonhormonal methods (male or female sterilisation). Contrarily,

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HC methods include hormonal IUDs, implants, patches, injections, and oral contraceptive pills (OCPs) (Cooper *et al*., 2022; Albawardi *et al*., 2022). Another aspect of HC usage is the cure of premenopausal conditions (Alfaifi *et al*., 2021).

According to certain research, the most frequent cause for women to cease utilising HC techniques was the emergence of mood disturbances and depressive symptoms while using it (Martell *et al*., 2023; Fruzzetti & Fidecicchi, 2020; Alfaifi *et al*., 2021). Another study reported that depressive symptoms and decreased libido occurred in women taking OCPs and improved after discontinuing OCPs in this sample (Martell *et al*., 2023; Bottcher *et al*., 2012). Furthermore, a study conducted on the association of hormonal contraception with depression found that the use of HC had been associated with an increased risk of depression (Skovlund *et al*., 2016). Mood changes, which range from moderate disruptions to severe clinical depression, are one of the most commonly reported reasons for HC discontinuation. Despite the evidence, the link between HC and psychiatric adverse effects remains debatable (Schaffir *et al*., 2016). Additionally, because there is a link between hormonal contraception and poor mood or depression, women with a personal or familial history of depression should exercise caution (Mu *et al*., 2022). Lastly, Inconsistent research methods and lack of uniform assessments make it difficult to attain strong inferences about HCs' adverse mood or depression affects their users are at risk for (Schaffir,2016).

Objective of Study

The purpose of this study was to examine the association between HC use and depression among Somali women. Psychiatric disorder/morbidity and perceived stress in patients on hormonal contraception, with mood changes and depression ranging from mild disturbances to severe clinical depression, which eventually, at times, led to circumstances for discontinuation of HC. Thus, statistically compare the aforesaid parameters with those without depression.

METHODOLOGY

The study was carried out in (tertiary) Benadir mother-and-child hospital and a Somali Sudanese hospital in Mogadishu, Somalia. A hospital-based cross-sectional study was conducted among women who use HCs in Mogadishu, Somalia, from August to December 2022. All participants were women living in Mogadishu, between the age bracket of 15 and ≤35 years old, using HC methods, and with no prior established history of depression. The number of participants who were on HC drugs for the cross-sectional descriptive study was 227. All voluntarily participating individuals received informed consent after being told about the study's confidentiality and their freedom to refuse participation at any stage. The study was done in accordance with the Benadir mother-and-child hospital's ethical guidelines and a Somali Sudanese hospital declaration.

Data Collection

The data were collected using the Patient Health Questionnaire-9 (PHQ-9) for common mental disorders. Due to the circumstances surrounding the participants' productivity in Somali contexts, a questionnaire comprising the Beck Depression Inventory-II was not used in this study for individual productivity characteristics. The questionnaire contained socio-demographic and hormonal contraception usage questions.

Data Analysis

Data were analysed using both descriptive and inferential statistics such as percentage, t-test, and analysis of variance (single and two factors without replication ANOVA), and the associations between the outcome of interest (depression) and predictor were studied using binary and multiple logistic regression. Excel and SPSS for Windows version 25 software were employed in the analysis. The findings are organised logically into tables,

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numbers, figures, and statistical conclusions that address the aims and objectives, discussions, and recommendations.

RESULTS

Socio-Demographic Characteristics of Respondents

Two hundred and twenty females who met the criteria and were using the hormonal method of contraception were selected for this study and freely invited to participate, with a 100% response rate. More than half of the women who participated in this study, 123 (54.2%) were aged between 25 to 34 years, and that is significantly higher than the other two age categories when performed a single factor analysis of variance with a p-value of $2.35x10^{-32}$. Furthermore, with 68.7% of the participants being housewives, the results were significant when tried in a two-sample assuming unequal variances with a p-value of 2.3×10^{-28}. As for their educational level, 36.1% had informal education in one way or another, 37% were at the secondary level, while only 26.9% had other types of education, and that is significantly less than the other two types of education with a p-value of $6.6x10^{-11}$. When tested in a single factor analysis of variance and a further post hoc test. With a p-value of $2.94x10^{-86}$, a highly significant percentage of participants (87.7%) had incomes of under $600 (Table 1).

Table 1: Socio-demographic characteristics of the study

Variable			%	P-value
Age	15-24	64	28.2	
	25-34	123	54.2	$2.35x10^{-32}$
	≥ 35	40	17.6	
Occupation	Housewife	156	68.7	$2.3x10^{-28}$
	Employee	71	31.3	
Education level	Informal Education	82	36.1	
	Secondary Level	84	37.0	$6.6x10^{-11}$
	≥ Others	61	26.9	
Income Level	≤ 600	199	87.7	$2.94x10^{-86}$
	≥ 600	28	12.3	

Hormonal Contraceptive Uses Characteristics

More than half (50.2%) of the participants' status ranges from having no children to having three children with a p-value of $3.04x10^{-11}$ when tested in two-sample assuming unequal variances t-test at 95% confidence interval, while the rest have more than four children. Furthermore, 43.6% of the participants have been currently using Jadelle Implants (a levonorgestrel-releasing implant) as a contraceptive measure medication with a significance of $7.13x10^{-28}$ while only 18.1% use pills (progestin and oestrogen), and the rest (38.3% of the participants) used Norplant capsules (capsules release progestin over five years) or other methods. As for the duration of HCs usage, 44.1% were using HC for one year and more with a significance of $8.04x10^{-16}$, 22.9% for more than six months, and the rest (33%) more than three months. In gaging the physiological side effect incurred by respective HC for their users that are taking part in the study, 39.6% of respondents were taking anti-depression therapy with a comparative significance of $4.49x10^{-14}$, and 78.9 were in overall good health with a significance of $9.32x10^{-53}$, 21.1% of participants were in poor health (Table 2).

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Table 2: Hormonal contraceptive usages characteristics

Variable			%	P-value
Number of children	0-3	114	50.2	$3.04x10^{-11}$
	4-7	77	33.9	
	Eight and above	36	15.9	
Type of hormonal contraceptive methods	Pills (progestin and oestrogen)	41	18.1	
	Jadelle (Levonorgestrel-releasing implant)	99	43.6	$7.13x10^{-28}$
	Norplant(progestin)/Others	87	38.3	
Duration of hormonal contraceptives usage	more than 3 months	75	33.0	
	more than 6 months	52	22.9	$8.04x10^{-16}$
	1 year and more	100	44.1	
Have you taken any depression therapy in the past	Yes	90	39.6	
	No	137	60.4	$4.49x10^{-14}$
Self-related health	Good	179	78.9	$9.32x10^{-53}$
	Poor	48	21.1	

Patient Health Questionnaire-9 (PHQ-9)

To monitor the degree of depression, the PHQ-9 module for common mental depression was used to calculate and determine the prevalence of depression (Cameron *et al*., 2008; Tamburrino *et al*., 2009), which scores each of the nine DSM-IV criteria as "0" (not at all) to "3" (nearly every day). It has been approved for usage in primary care. According to the responses of the study groups, the majority of the respondents (61) had moderate depression (26.9%) with a p-value of $1.44x10^{-9}$ @95% CL in a Single Factor ANOVA analysis based on PHQ-9, and thirteen (13.1%) of respondents have Minimal depression. In contrast, fifty (22.0%) of the subjects had Mild depression. Yet, 43 (18.9%) experienced moderate depression, while another 43 (18.9%) had severe depression (Table 3). Table 3: Patient Health Questionnaire-9 (PHQ-9) of study participants who use HC drugs from Benadir Mother & Child Hospital and Somali Sudanese Hospital Mogadishu-Somalia (N = 227).

Table 3: Patient Health Questionnaire-9 (PHQ-9) of study participants who use HC drugs from Benadir Mother & child hospital and Somali Sudanese Hospital Mogadishu-Somalia (N = 227).

Variable	Frequency	Percent	P-value
Minimal depression	30	13.1	$1.44x10^{-9}$
Mild depression	50	22.0	
Moderate depression	61	26.9	
Moderately severe depression	43	18.9	
Severe depression	43	18.9	
Total	227	100	

Multivariate Analysis

An unadjusted multiple logistic regression model was first employed, and then predictors that had significant associations on bivariate analysis at 95% CI were then entered for multivariate analysis. Variables such as occupation, income level, type of HCs, and duration of use demonstrated statistical

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significance in terms of their association with depression in multivariate analyses. Female housewives were 1.91 times more at risk of any form of depressive disorder than those who are employed (AOR=1.91 @ 95% CI of 1.10 and 3.34 with a p-value of $2.2x10^{-2}$). Among respondents who had more than $600 were 0.45 times less likely to develop depression compared to those who had less than $600 (AOR=0.45 @ 95% CI of 0.26, 0.80 with p-value $7x10^{-3}$. However, mothers who used implant (Jadelle) and pills were more likely to develop depression than those who used Norplant with AOR=2.26, CI: 1.11-4.63 with a p-value of $2.4x10^{-2}$, and AOR=2.25, CI: 1.18- 4.32 with p-value $1.40x10^{-2}$ respectively. In addition, mothers who use HCs for one year and more/over are less likely to develop depression compared to those who use HCs for more than 3 months and 6 months, respectively with AOR=0.30, CI: 0.15 - 0.60 with a p-value of $1x10^{-3}$, and AOR=0.30, CI: 0.15-0.60 with p-value $1x10^{-3}$ respectively (*Table 4*).

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Table 4: Prevalence of depression multivariate analysis

Variable		Prevalence of depression		Bivariate analysis	Multivariate analysis	p-value
		With depression	Without depression	COR (95% CI)	AOR (95% CI)	
Age	15-24	43	21	reference	Reference	
	25-34	84	39	0.48(0.29,0.82)	1.43(0.50,4.07)	0.503
	≥ 35	24	16	0.46(0.31,0.67)	0.87(0.42, 1.81)	0.725
Occupation	Housewife	96	60	0.62(0.45,0.86)	1.91 (1.10, 3.34)	0.022
	Employee	55	16	reference	Reference	
Education level	Informal	42	40	0.95(0.61,1.46)	1.47 (0.90,2.40)	0.116
	Secondary	58	26	0.44(0.282,0.71)	0.88 (0.50, 1.55)	0.670
	Bachelor and more	51	10	reference	Reference	
Income Level	≤ 600	127	72	0.56(0.42, 0.75)	0.45 (0.26, 0.80)	0.007
	≥ 600	24	4	Reference	Reference	
Type of hormonal methods	pills	36	5	0.13(0.05, 0.35)	2.25(1.18,4.32)	0.014
	Implant (Jadelle)	60	39	0.65(0.43,0.97)	2.26 (1.11, 4.63)	0.024
	Norplant/Others	55	32	reference	Reference	
Contraceptive duration	≥ 3 months	55	20	0.36(0.21, 0.60)	0.35 (0.19, 0.64)	0.001
	≥ 6 months	39	13	0.33(0.17, 0.62)	0.30 (0.15,0.60)	0.001
	≥ 1 year	57	43	1 reference	Reference	

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DISCUSSION

The goal of this study was to investigate depression prevalence and perceived stress among Somali married women who use hormonal contraception, as well as factors associated with it, such as mood changes and depression ranging from mild disturbances to severe clinical depression, which eventually led to circumstances for hormonal contraceptive (HC) discontinuation. Being a housewife, having attained both informal and formal education, having an income status of under $600, having no children to three children, and have been on contraception for more than one year were more likely to use modern contraceptives. According to published literature such as the Somali Demographic Health Survey, the prevalence of modern contraceptive use among Somali women in Somalia is as low as 7% of married women using any contraceptive method and 1% using any modern method at all (Abdulahi *et al*., 2020; SHDS, 2020; Gure *at al*., 2016), while that of neighbouring countries is in the ranges of 40% to 68.9% (Mohammed *at al*., 2014; Kame, 2022; Asaolu *et al*., 2019). This low-water mark (1% to 7%) prevalence is something that is entrenched in the Somali culture that does not support the use of modern contraceptives, which justifies the small sample confined to less than 300 as a good representative in the Somali context and itself presages defiance in the direction contraceptives are gradually reversing (Mohamed & Sundberg, 2022).

Knowledge of contraceptive benefits such as birth spacing and side effects it incurs along the way upon its users, in this case a Somali woman, is a precondition for their proper use. Based on the above, the preference of the contraceptive type has connotations, which in turn affect the level of depression one experiences. The majority of the respondents had moderate (26.9%) with a significance to minimal or mild depression respectively, and that corresponds to previous findings (Albawardi *et al.,* 2022; Ramdhan *et al.,* 2018; Odusolu *et al.,* 2020) n sub-Saharan Africa and the middle east, where Women who use implantable contraception are more likely to experience mood swings, anxiety, and depression than nonhormonal controls, which is also the most common reason for implant removal and discontinuance. Fortunately, after all, this level of depression does not necessitate psychiatric assistance (Albawardi *et al.,* 2022).

The findings of this study, for multivariate analysis, the predictors that had significant associations on bivariate analysis, showed that mothers who are housewives on HC methods are more at risk to develop depression compared to those who are employed and use HCs. The finding of this study showed that women who had a high-income level (>600) were less likely to develop depression compared to those who had a low-income level. Likewise, this finding showed mothers who use implants (jadelle: Levonorgestrel-releasing implant) and pills (progestin and oestrogen) were more likely to develop depression than those who used Norplant, as there has been reported that they both have similar adverse effects, but clinical depressions suffered by women using implants is not more frequent in compression to that none-hormonal contraception. Yet, women who utilise them have a lower chance of ectopic pregnancy, other pregnancy complications, and pelvic inflammatory sickness (Sivin, 2003). However, this cross-sectional study identified mothers who used HCs for one year and more were compared with those who used HCs for more than 3 months and 6 months, respectively. This reinforces the findings in the study's section on HC usage characteristics.

The relationship between a medical treatment and side effects always makes it difficult to separate correlation from causation. Both HC use and depression are common occurrences that are easily influenced by other confounding factors such as those investigated in this study. In addition to previous research indicating that hormonal contraception increases the likelihood of starting antidepressants (Singata-Madliki *et al*., 2021;

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Skovlund *et al*., 2016), it finds that depression is a real, prospective adverse effect of hormonal contraception that is perhaps underappreciated in current practice (Family doctor, 2023). As the intention of the study has been to highlight the prevalence of hormonal contraception use and its association with depression among women in Somalia, it has been observed that the majority of the respondents had been exhibiting none-minimal to mild depression. Keeping in mind that there are no known interactions between commonly prescribed antidepressants and different birth control methods in gauging the physiological side effects incurred by respective HC for their users who are participating in the study, nearly forty percent of respondents were taking antidepressant therapy, and seventy-nine percent were in overall good health, could be explained in the above mild depression of the participants of the study (Ditzell J & Sharkey L, 2021). On that note, it warrants further studies to comparatively measure up with the Somali female using nonhormonal contraceptive methods (Albawardi *et al*., 2022; Family Doctor, 2023).

CONCLUSION AND RECOMMENDATIONS

The findings of this study revealed that depression is related to the HCs in some way. In addition to cultural and religious barriers and a lack of contraceptive understanding, this may lead to women discontinuing or abandoning HCs entirely, fearing the adverse effects of depression, putting their lives in danger. Therefore, due to the importance of this topic and its controversy, it warrants similar research to be conducted in other parts of the country to complement the work done here and come up with new findings to fill the remaining gap. Finally, introducing mental health service arrangements in the study population area, governmentally owned as well as private institutions is important.

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