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Psychological impact of pregnancy on adolescents and adults: A comparative study

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Abstract---Aims: Based on the hypothesis that pregnant adolescents would exhibit more psychiatric symptoms than pregnant adults, our aim was to study the difference between their psychological profiles, psychiatric presentations, and associated factors, especially her relationship with her husband, and her interaction with the foetus. Method: Two groups of pregnant females, adults (age > 25) (n=90) & adolescents (age <21) (n=90), recruited from the obstetric antenatal care outpatient clinic at Cairo university hospitals, were assessed using Birmingham Interview for Maternal Mental Health, Structured Clinical Interview for DSM-IV Axis I Disorders, State trait Anxiety Inventory, Beck Depression Inventory, and Intimate Bond Measure. Results: 53.3% of the adults group received psychiatric diagnoses, as opposed to 37% of the adolescents' group. The main perceived causes were poor adjustment to pregnancy, socioeconomic problems and father's behaviour. Conclusion: Pregnant women suffer from

psychiatric symptoms or disorders and do not seek professional help, regardless of their age.

Keywords---perinatal depression, pregnant adolescent, perinatal anxiety, pregnancy, prenatal mental health.

Introduction

A woman faces tremendous challenges when transitioning to motherhood. Especially for adolescents who often don't have the necessary knowledge & skills to deal with motherhood, which adds stress to their already challenged developmental level (Erfina., Widyawati, McKenna, Reisenhofer, & Ismail, 2019), thus increasing their risk for mental health problems (Tebb & Brindis, 2022). Mental illness during this period is not assessed and consequently goes untreated (Apter, Devouche, & Gratier, 2011) and there is an increase in psychiatric morbidity, particularly depression and anxiety (Tebb & Brindis, 2022, Nasreen Kabir, Forsell, & Edhborg, 2011). Antepartum psychiatric symptoms can lead to postpartum depression, lower birth weight, spontaneous abortion, premature delivery, a malformed or growth-retarded baby and have a negative impact on child development (Nasreen *et al.*, 2011, Mulder, Robles de Medina, Huizink, Van den Bergh, Buitelaar, & Visser, 2002).

Subjects & Method

Subjects

A cross-sectional sample of 180 pregnant women was picked from the antenatal care clinic at Cairo university hospitals along 21 months. All subjects were in the last trimester of pregnancy. Women with intellectual disabilities, medical disorders, epilepsy or other organic mental disorders or with history of psychiatric disorders were excluded. Subjects were divided, according to age, into two groups of 90, one for adolescents (ages 15-21) and one for adults (ages 25-31). The assessment procedure lasted on average from two to four hours for each patient, mostly carried out in a single session. Approvals from the scientific and ethical committees of both the psychiatric, obstetric & gynaecological departments at Cairo university hospitals, in addition to, the faculty committee were obtained prior to research. Members of both groups initially agreed to a written informed consent that included the purpose and steps of the research. Participants understood that they had the right to withdraw from the study at any point.

Method

All subjects were subjected to the following:

- A. Birmingham Interview for Maternal Mental Health (5th edition): (Brockington, 1999) (Arabic version; Fakher *et al.*, 2010). A semi-structured interview consisting of 120 compulsory probes and 175 ratings under 8 sections. In this study, only the first three sections, covering pregnancy,

were used after permission from authors. It required around 30-45 minutes to be applied.

- B. Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I): (First, Spitzer, Gibbon, & Williams, 1997)
A diagnostic tool used to determine the presence of DSM-IV Axis I disorders. It consists of questions covering DSM-IV diagnostic criteria for each individual disorder and includes questions about duration of illness and change in clinical status. It takes about 60-90 minutes to apply.
- C. State trait Anxiety Inventory (STAI): (Spielberger, 1980) A psychological inventory based on a 4-point Likert scale. It measures two types of anxiety - state anxiety and trait anxiety and the severity of the overall anxiety level. Form Y, the version used, has 20 items for assessing trait anxiety and 20 for state anxiety. Only the S-anxiety scale was used in this study. It takes 5-10 minutes to apply.
- D. Beck Depression Inventory (BDI): (Beck, Ward & Mendelson, 1961) (Beck, 1988) A self-report scale designed to assess DSM-IV defined symptoms of depression over the previous 2 weeks. It takes 5-10 minutes to apply.
- E. Intimate Bond questionnaire: (Wilhelm & Parker, 1988) (Arabic version; Moussa *et al.*, 2010) A self-report measure assessing two key underlying dimensions, care and control between partners in an intimate relationship. It consists of 24 items with 2 subscales: 12 items for each dimension. According to the scores on both subscales the relationship is then categorized under one of 4 types of intimate relations: optimal intimacy, affectionate control, affectionless control, and absence of intimacy. It takes approximately 10 -15 minutes.

Statistical analysis

All data from both groups were computed and conducted the SPSS (Statistical Package for Social Sciences version 22) software for statistical analysis. Data was summarized using mean, standard deviation, median, minimum, and maximum in quantitative data and using frequency (count) and relative frequency (percentage) for categorical data. Comparisons between quantitative variables were done using the non-parametric Kruskal-Wallis and Mann-Whitney tests (Chan, 2003a). For comparing categorical data, Chi square test (χ^2) was performed. Exact test was used instead when the expected frequency is less than 5 (Chan, 2003b). p values less than 0.05 were considered as statistically significant.

Results

Description of the participants: The study sample consists of two groups: *Group A: Pregnant adolescents (n=90)*, *Group B: Pregnant adults (n=90)*. The mean age is 26.6 years & 17.19 years for adult and adolescent groups respectively. The adults had a longer duration of marriage ($p=0.048$), a higher educational level ($p < 0.001$) and contained more working subjects ($p < 0.001$) in comparison to the adolescents.

Psychiatric presentations and perceived causes (Table 1): More than half (53.3%) of the adults received psychiatric diagnoses according to DSM IV (SCID I), unlike

the adolescents where only 39.9% received a diagnosis, ($p=0.143$). Using the Birmingham Interview, adolescents reported more prenatal anxiety than adults ($p= 0.020$). All adolescents reported the onset before the 5th month of pregnancy unlike adults ($p < 0.001$). Adults experienced more irritability than adolescents ($p = 0.020$). The main perceived causes of anxiety as per the adolescents were fear of foetal death ($p = 0.007$) and fear of foetal abnormality ($p= 0.025$). On the STAI the adults showed higher stress level ($p= 0.040$).

Although the depressive symptoms reported by both groups did not show a statistically significant difference ($p=0.244$) on the Birmingham interview, yet adults' depression was of higher severity than that of adolescents as well as the ideas of suicide. Adults obtained higher total scores on the BDI ($p<0.001$), even in the rating where they had more severe depression ($p=0.006$). The main perceived causes of psychiatric disorder for the adults were poor adjustment to pregnancy or motherhood ($p=0.018$), social or financial problems ($p=0.007$) and the behaviour of the father ($p=0.010$). More than half of the adolescents experiencing psychiatric symptoms/disorder did not report any role impairment ($p=0.016$). Regarding the treatment sought, only one adult patient was referred to a psychiatric service, the rest of the two groups did not seek treatment.

Table 1 Psychiatric presentations and perceived causes						
		Group				<i>p</i> value
		Adults group		Adolescents group		
		Number	%	Number	%	
SCID I						
Diagnosis	None	42	46.7%	55	61.1%	0.143
	OCD	1	1.1%	0	.0%	
	GAD	15	16.7%	16	17.8%	
	Depression / GAD	19	21.1%	13	14.4%	
	Depression	13	14.4%	6	6.7%	
Birmingham Interview for Maternal Mental Health						
Prenatal anxiety						
Prenatal anxiety	No anxiety or undue worrying	29	32.2%	15	16.7%	0.020
	Mild anxiety/worrying	27	30.0%	44	48.9%	
	Moderate anxiety/worrying	33	36.7%	30	33.3%	
	Severe anxiety/worrying	1	1.1%	1	1.1%	
Causes of anxiety as perceived by both groups						

Fear of parturition	Anxiety, worrying explained by other factors	23	25.6%	13	14.4%	0.140
	This factor contributed to anxiety or worrying	62	68.9%	67	74.4%	
	This was the main cause	5	5.5%	10	11.1%	
Fear of fetal death	Anxiety, worrying explained by other factors	26	28.9%	18	20.0%	0.007
	This factor contributed to anxiety or worrying	53	58.9%	70	77.8%	
	This was the main cause	11	12.2%	2	2.2%	
Fear of fetal abnormality	Anxiety, worrying explained by other factors	27	30.0%	20	22.2%	0.025
	This factor contributed to anxiety or worrying	58	64.4%	70	77.8%	
	This was the main cause	5	5.6%	0	.0%	
Fear of inadequacy as mother	Anxiety, worrying explained by other factors	63	70.0%	61	67.8%	0.872
	This factor contributed to anxiety or worrying	27	30.0%	28	31.1%	
	This was the main cause	0	.0%	1	1.1%	
Fear that there will be too little support	Anxiety, worrying explained by other factors	68	75.6%	71	78.9%	0.565
	This factor contributed to anxiety or worrying	20	22.2%	19	21.1%	
	This was the main cause	2	2.2%	0	.0%	

Fear that child protection agencies will remove the baby	Anxiety, worrying explained by other factors	90	100.0%	90	100.0%	-----
	This factor contributed to anxiety or worrying	0	.0%	0	.0%	
	This was the main cause	0	.0%	0	.0%	
Other fears	Anxiety, worrying explained by other factors	86	95.6%	87	96.7%	0.061
	This factor contributed to anxiety or worrying	0	.0%	3	3.3%	
	This was the main cause	4	4.4%	0	.0%	
Abnormal irritability during pregnancy in both groups						
Abnormal irritability during pregnancy	None	37	41.1%	52	57.8%	0.020
	Irritability experienced but not expressed	9	10.0%	11	12.2%	
	Irritability resulting in angry silence, arguments, outbursts, verbal abuse or threats	40	44.4%	21	23.3%	
	Anger resulting in damage to property	1	1.1%	0	.0%	
	Assaults on persons	3	3.3%	6	6.7%	
Depressive symptoms reported by both groups						
Prenatal depression	No depression	49	54.4%	55	61.1%	0.244
	Mild depression	21	23.3%	24	26.7%	
	Moderate depression	18	20.0%	11	12.2%	
	Severe depression	2	2.2%	0	.0%	
	Delusional depression	0	.0%	0	.0%	

	Schizoaffective depression	0	.0%	0	.0%	
Suicidal ideas during pregnancy	None	77	85.6%	83	92.2%	0.315
	Fleeting ideas of suicide	7	7.8%	2	2.2%	
	Persistent ideas of suicide	3	3.3%	2	2.2%	
	Suicidal attempts or gestures	3	3.3%	2	2.2%	
	Determined suicidal activity	0	.0%	1	1.1%	
	Suicidal attempts	0	.0%	0	.0%	
Depressive delusions during pregnancy	No depressive ideas	90	100.0%	88	97.8%	0.497
	Depressive ideas not meeting criteria for delusions	0	.0%	2	2.2%	
	Depressive delusions	0	.0%	0	.0%	
Perceived cause of psychiatric disorder in the two groups						
Poor adjustment to pregnancy or motherhood	Symptoms explained by other factors	44	48.9%	34	37.8%	0.018
	This factor contributed to symptoms	14	15.6%	7	7.8%	
	This was a major cause of symptoms	1	1.1%	1	1.1%	
	This was the sole cause	0	.0%	5	5.6%	
	Inapplicable	31	34.4%	43	47.8%	
Physical health or obstetric problems	Symptoms explained by other factors	50	55.6%	41	45.6%	0.271
	This factor contributed to symptoms	8	8.9%	5	5.6%	
	This was a major cause of symptoms	1	1.1%	1	1.1%	
	This was the sole cause	0	.0%	0	.0%	

	Inapplicable	31	34.4%	43	47.8%	
Adverse events or lifestyle changes	Symptoms explained by other factors	36	40.0%	35	38.9%	0.186
	This factor contributed to symptoms	15	16.7%	8	8.9%	
	This was a major cause of symptoms	7	7.8%	4	4.4%	
	This was the sole cause	1	1.1%	0	.0%	
	Inapplicable	31	34.4%	43	47.8%	
State Trait Anxiety Inventory						
Rating (STATE TRAIT ANXIETY)	Moderately low stress level	0	.0%	5	5.6%	0.040
	Average stress level	47	52.2%	45	50.0%	
	Moderately high stress level	31	34.4%	35	38.9%	
	High stress level	12	13.3%	5	5.6%	
Beck Depression Scale						
Rating (BECK DEPRESSION)	No/Minimal depression	67	74.4%	83	92.2%	0.006
	Mild depression	10	11.1%	5	5.6%	
	Moderate depression	9	10.0%	2	2.2%	
	Severe depression	4	4.4%	0	.0%	

Associated psychosocial factors (Table 2): Adults reported more unnoticed and concealed pregnancies ($p=0.004$) and showed better adjustment during the 2nd trimester ($p=0.001$). Although not statistically significant, 10% of adults had a negative emotional response to pregnant appearance versus 6.7% of adolescents. More adults had to make some sacrifices in their careers or social lives than adolescents ($p=0.003$). While adults were much more involved in interacting with the foetus and more mentally and practically prepared, more than 60% of the adolescents completely ignored/ had a negative reaction towards the foetus and 50% had not made any mental or practical preparations or their preparations were inadequate or late (p value < 0.001).

Although adolescents showed higher perception of the care given by their husbands ($p=0.008$), yet it was the adults that showed the most positive type of relationship (optimal intimacy) ($p < 0.001$). Adolescents' relationship with husband was deteriorated during pregnancy ($p = 0.044$). The two groups were the same

regarding reaction of the father, the support provided by him, libido during pregnancy, conjugal jealousy, and domestic violence. The majority of both groups showed reduced/ complete loss of libido. Both groups showed no change in the relationship with the families of origin & by marriage, or friends & confidants. However, with older children, adults showed a deterioration in their relationship ($p= 0.014$). As for the support provided by the family and surrounding network, again adults reported no support in comparison with adolescents ($p= 0.010$).

Table 2 Associated psychosocial factors:						
		Group				
		Adults group		Adolescents group		<i>p</i> value
		Number	%	Number	%	
Birmingham Interview for Maternal Mental Health						
Planning of pregnancy	Strongly desired	28	31.1%	32	35.6%	0.876
	Planned Pregnancy	34	37.8%	31	34.4%	
	Unplanned but convenient	14	15.6%	17	18.9%	
	Mother was indifferent or ambivalent	3	3.3%	3	3.3%	
	Unplanned & inconvenient	8	8.9%	6	6.7%	
	Associated with shame and censure	3	3.3%	1	1.1%	
Unacknowledged pregnancy	No denial	71	78.9%	85	94.4%	0.004
	Unnoticed pregnancy	2	2.2%	0	.0%	
	Concealed pregnancy	17	18.9%	5	5.6%	
	Denial of pregnancy	0	.0%	0	.0%	
Mother's emotional reaction to conception	Strongly positive reaction	27	30.0%	33	36.7%	0.231
	Positive reaction	46	51.1%	36	40.0%	
	Equanimity, indifference or ambivalence	8	8.9%	15	16.7%	
	Negative reaction	5	5.6%	5	5.6%	
	Strongly negative reaction	4	4.4%	1	1.1%	
Ideas about termination	Termination was never considered	82	91.1%	81	90.0%	1

	Mother was under pressure from others to terminate but refused	1	1.1%	2	2.2%	
	Mother would have liked to terminate but had ethical objections or fears (include a secret wish for miscarriage)	7	7.8%	6	6.7%	
	Termination was the preferred option but was refused by doctors / husband	0	.0%	0	.0%	
	Termination was planned, but mother changed her mind	0	.0%	1	1.1%	
	Mother made attempts to induce miscarriage, or termination failed	0	.0%	0	.0%	
Adjustment during 2nd trimester	Strongly positive reaction	8	8.9%	1	1.1%	0.001
	Positive reaction	36	40.0%	31	34.4%	
	Equanimity, indifference or ambivalence	16	17.8%	38	42.2%	
	Negative reaction	29	32.2%	18	20.0%	
	Strongly negative reaction	1	1.1%	2	2.2%	
Adjustment during 3rd trimester	Strongly positive reaction	6	6.7%	1	1.1%	0.068
	Positive reaction	49	54.4%	60	66.7%	
	Equanimity, indifference or ambivalence	13	14.4%	12	13.3%	
	Negative reaction	18	20.0%	16	17.8%	
	Strongly negative reaction	4	4.4%	1	1.1%	

Emotional response to pregnant appearance	Pregnant appearance a source of pride or pleasure	44	48.9%	51	56.7%	0.635
	Appearance not a problem	21	23.3%	21	23.3%	
	Embarrassment over gravid shape	13	14.4%	10	11.1%	
	Dysmorphophobia	12	13.3%	8	8.9%	
Concern about the unborn child	Condition of infant not a problem	88	97.8%	83	92.2%	0.115
	Worrying investigations	1	1.1%	6	6.7%	
	Infant known to be abnormal	0	.0%	0	.0%	
	Mother is worried because she has experienced previous fetal loss	1	1.1%	1	1.1%	
Interaction with the foetus	Mother much involved and includes other family members	21	23.3%	8	8.9%	0.006
	She talks, reads, sings to baby	14	15.6%	15	16.7%	
	Minimal interaction	12	13.3%	6	6.7%	
	Foetus is completely ignored	39	43.3%	60	66.7%	
	Negative reaction to foetus	4	4.4%	1	1.1%	
Preparation for the new-born	Mother intensely occupied in preparation & fantasies about her care of the new-born	15	16.7%	3	3.3%	< 0.001
	Mother is fully aware of coming life change, & is mentally & practically prepared	35	38.9%	37	41.1%	

	Mental & practical preparations are inadequate &/or late	37	41.1%	30	33.3%	
	No mental or practical preparations made	3	3.3%	20	22.2%	
Foetal abuse	No foetal abuse	88	97.8%	86	95.6%	0.682
	Mother fails to take normal precautions to protect the foetus inside	0	.0%	0	.0%	
	Mother has impulses to harm the foetus	2	2.2%	3	3.3%	
	Foetal abuse has occurred	0	.0%	1	1.1%	

Discussion

This study is a cross-sectional study that intended to compare between adolescent and adult pregnant women regarding:

- *Psychological factors* namely pregnancy adjustment, emotional reaction to conception, to pregnant appearance and to the baby
- *Possible psychiatric presentations:* whether in the form of symptoms or disorders.
- *Associated factors:* especially the relationship with their husbands, other relationships, and their interaction with the foetus.

The hypothesis was that adolescents will exhibit more psychiatric symptoms, specifically anxiety and depression than adults. A total of 180 pregnant females were included and put according to age into two equal groups of 90 each, adolescents (aged from 15 to 21) and adults (aged from 25 to 31). It was expected that adults had a longer duration of marriage, a higher educational level and contained working subjects in comparison to adolescents as these got married earlier, so dropped out of school and consequently did not get the opportunity to work. This is in line with those who stated that adolescent marriage generally causes girls to drop out of school, which in turn limits their income-earning potential (Kurz, Barua, Khale, & Prasad, 2006).

Concerning pregnancy planning and acknowledgement, around 20% of the adults reported unnoticed/ concealed pregnancy. This is probably due to cultural beliefs, like being envied for having more than one child rather than feelings of shame towards/ denial of pregnancy especially that adults showed better adjustment

during pregnancy. This could be compared to Fakher, Bakry, Moussa, & Raafat, 2015 who observed that women in Egypt probably concealed their pregnancies out of fear of the “bad eye” rather than being shamed of the pregnancy. In contrary, few adolescents reported concealed pregnancy since they viewed their pregnancy as a source of pride especially among peers.

Depression & Anxiety: Symptoms &/or Diagnosis

More than half of the adults (53.3%) received psychiatric diagnoses with 18% having anxiety disorders, 14% depression and 21% suffering from comorbid anxiety and depression, while the percentages in the adolescents were 18%, 7% and 14% respectively. Unlike what was expected in hypothesis and in contrary to previous research that views adolescence as a time of extreme stress (Kellough & Kellough, 2008) and that they were at an increased risk of anxiety symptoms (Rubertsson, Hellström, Cross & Sydsjö, 2014), both groups showed similar total score results on the STAI with adults having higher stress level. This could be explained by the fact that adults had more life burdens and that the adolescents were more supported. While adolescents reported more perceived prenatal anxiety than adults in the Birmingham Interview, adults reported irritability resulting in angry silence, arguments, outbursts, verbal abuse and sometimes assaults on persons specifically older children.

Factors influencing anxiety and depression during pregnancy **Husband Support**

Although the adolescents showed higher perception of husband care, yet adults showed the most positive type of relationship (*Optimal Intimacy*). This, in our opinion, might be because that even though adolescents’ husbands showed more care, they also showed more control which made the majority of the adolescents have the *Affectionate Control* type of relationship, reflecting the “paternal” role these husbands play, highly because of the young age of their wives. However, a previous Egyptian study using the Intimate Bond Measure found that 75% of the mothers in their study reported that their husbands abnormally controlled their relationship irrespective of age (Fakher *et al.*, 2015), so this raises the question of whether the control is cultural or depends on the wife’s age that makes her more financially and emotionally dependant enabling him to be more controlling.

Family Support

The absence of good support makes it hard for mothers to cope with distressing feelings and difficult situations related to parenthood. It is known from literature that pregnant women go through a mental reorganization that allows the development of maternal identity influenced by many factors, such as actual relationship with the partner and the family (Biaggi, Conroy, Pawlby, Pariante, 2016). In this study, adults showed that the less the social support the more negative the mother’s adjustment was in the second trimester, while with adolescents the presence of support did not affect their adjustment. Adults also reported no support provided by the family and surrounding network in comparison with adolescents while most of both groups reported no/insufficient support by the husband. A good percentage of adults reported deterioration of

their relationship with their older children which might have added to their stress.

Planning & acknowledgement of pregnancy

Approximately 30% of both groups' pregnancies were unplanned. A possible explanation is the unawareness of the methods & safety of contraception, in addition to cultural & religious beliefs &/or misconceptions against the use of contraception. The same percentage was reported by Fakher *et al.*, 2015. We found that the higher the total score of the BDI and the STAI, the more negative the mother's reaction towards the pregnancy was. This was in concordance with many studies that have found an increased risk of developing antenatal depression and anxiety in women as a negative emotional reaction towards this unplanned or unwanted pregnancy (Ajinkya, Jadhav, & Srivastava, 2013, Aslan, Aydin, Yazici, Aksoy, Kirkan & Daloglu, 2014, Bayrampour, McDonald and Tough, 2015, Brittain, Myer, Koen, Koopowitz, Donald, Barnett, Zar, & Stein, 2015, Dibaba Fantahun, & Hindin, 2013, Fellenzer and Cibula, 2014, Giardinelli, Innocenti, Benni, Stefanini, Lino, Lunardi, Svelto, Afshar, Bovani, Castellini, & Faravelli, 2012, Golbasi, Kelleci, Kisacik, & Cetin, 2010, Jeong Lim, Lee, Kim, Jung, & Joe, 2013, Manikkam and Burns, 2012, Martini, Petzoldt, Einsle, Beesdo-Baum, Hofler, & Wittchen, 2015, Mohamad Yusuff, Tang, Binns, & Lee, 2016, Mohammad, Gamble, & Creedy, 2011, Redshaw and Henderson, 2013, Waqas, Raza, Lodhi, Muhammad, Jamal, & Rehman, 2015, Weobong, Soremekun, Ten Asbroek, Amenga-Etego, Danso, Owusu-Agyei, Prince, & Kirkwood, 2014, Yanikkerem, Ay, Mutlu, & Goker, 2013), although two studies did not find this (Groves, Kagee, Maman, Moodley, & Rouse, 2012, Hartley, Tomlinson, Greco, Comulada, Stewart, le Roux, Mbewu, & Rotheram-Borus, 2011). Two studies (Lee, Lam, Sze Mun Lau, Chong, Chui, & Fong, 2007, Marchesi, Bertoni, & Maggini, 2009) observed that an unwanted pregnancy was a significant predictor of depression only in the first trimester, with less importance over time.

Parity

The adults' group that contained many multigravidas suffered from more severe depression and anxiety while those with first or second pregnancies showed the highest percentage of positive emotional reaction in both groups. Even though that 79% of adolescents were primigravida, yet they still experienced negative adjustment during the second trimester. In adults, the higher the previous number of births the more negative the mother's adjustment in the third trimester was, while adolescents showed improvement adjusting as the pregnancy progressed regardless of the number of previous pregnancies. Multiparous women are at increased risk of developing antenatal anxiety and depression according to some studies (Abuidhail and Abujilban, 2014, Golbasi *et al.*, 2010, Redshaw and Henderson, 2013, Yanikkerem *et al.*, 2013) while others (Ali, Azam, Ali, Tabbusum, and Moin, 2012, Fisher, Tran, Duc Tran, Dwyer, Nguyen, Casey, Simpson, Hanieh, & Biggs, 2013, Raisanen, Lehto, Nielsen, Gissler, Kramer, & Heinonen, 2014) found nulliparous or primiparous women as more at risk than multiparous women, and others did not find any significant association between parity and antenatal mental health (Abujilban, Abuidhail, Al-Modallal, Hamaideh,

& Mosemli, *et al.*, 2014, *Dibaba et al.*, 2013, Fisher *et al.*, 2010, Husain, Parveen, Husain, Saeed, Jafri, Rahman, Tomenson, & Chaudhry, 2011, Ratcliff, Sharapova, Suardi, & Borel, 2015).

Obstetric complications

Obstetrical complications, by definition, imply a threat to the health and well-being of the mother, her developing infant, or both. While pregnancy can be a source of stress and anxiety for women who are experiencing normal, low-risk pregnancy, it is likely much more stressful and anxiety producing for women experiencing a pregnancy fraught with difficulties (Fairbrother, Young, Janssen, Antony, & Tucker, 2015). Women with current or past pregnancy/delivery complications, with a history of pregnancy loss, pregnancy terminations or stillbirth have been found to be more likely to experience antenatal depression, anxiety and pregnancy-specific anxieties (Ajinkya *et al.*, 2013, Ali *et al.*, 2012, Chojenta, Harris, Reilly, Forder, Austin, & Loxton, 2014, Fisher *et al.*, 2013, Golbasi *et al.*, 2010, Husain *et al.*, 2011, Raisanen *et al.*, 2014, Stewart, Umar, Tomenson, & Creed, 2014, Waqas *et al.*, 2015, Weobong *et al.*, 2014, Zeng, Cui, & Li, 2015).

Gong, Hao, Tao, Zhang, Wang, & Xu, 2013 found that women with a history of miscarriage and inter-pregnancy interval <6 months are at increased risk of developing anxiety and depression during pregnancy. This was particularly true for two patients included in this study, an adolescent who had lost three previous babies in the eighth month of gestation, and an adult with previous recurrent abortions, both showing severe anxiety and depression. The main perceived causes of anxiety reported in our study were fear of parturition, fetal death, fetal abnormality, and fear of inadequacy as a mother and this can be compared to a previous Egyptian study with similar findings (Fakher *et al.*, 2015). Of note also is that fear of childbirth and negative thoughts about the upcoming delivery have been associated with increased risk of antenatal anxiety and depression (Raisanen *et al.*, 2014, Rubertsson, Hellström, Cross, & Sydsjö, 2014).

It is evident that while adults were much more involved in interacting with the foetus and were much more mentally and practically prepared, more than 60% of the adolescents completely ignored/ had a negative reaction towards the foetus and 50% had not made any mental or practical preparations or their preparations were inadequate or late. This might be because adolescents are not psychologically/ emotionally mature enough to become mothers. Or as East, Chien, & Barber, 2012 put it “that they do not adequately bond with their babies”. This goes in line with Figueiredo, Tendais, & Dias, 2014 who expected that adolescent pregnant women may have unrealistic expectations about infants, and they also have difficulty separating the infant's perspective from their own. Given the way they reacted to the foetal interaction question, their ability to realize the existence of another human being inside them is questioned. Several developmental tasks are involved in the transition to parenthood, namely maternal identity formation and acceptance of the baby as a separate person. The performance of these developmental tasks may be more difficult for adolescent mothers because they are encountering the challenges of adolescence and are likely ill-prepared for motherhood (Figueiredo *et al.*, 2014). They face the

challenges of forming their adult identity at the same time as they are required to assume the duties of a wife and a mother, which can create much pressure (Dorit, Huss, & Massry, 2015)

A lot of women who reported not being practically prepared in both groups gave financial reasons for the delay in buying stuff for the baby. It is important to mention that none of the women were screened during routine antenatal visits for mood or anxiety disorders, despite the high prevalence of depression and anxiety symptoms. This may be the result of number of factors. Clinicians may be reluctant/ not trained enough to ask questions and patients may avoid reporting problems that arise from depression or anxiety. Symptoms of depression during pregnancy may not raise clinicians or patients concern because several of these experiences e.g., disturbance in appetite, sleep and energy levels, are normative for many pregnant women. Besides, the stigma of having depression during pregnancy may prevent women from seeking active treatment and feeling guilty for suffering during what is supposed to be a happy period.

Difficulties and challenges

It's worth noting that we initially faced trouble collecting subjects. The antenatal obstetric clinic is not designed for psychiatric assessment. It was loud, non-private and patients were in a hurry to catch their turn so there were many dropouts and refusals at first. To be able to assess the patients, we would take them outside the clinic in an away quite area which resulted in patients being missed and it was a very slow process. This was later somewhat resolved when a waiting area for patients was built, so it was easier to locate the patients and to find somewhere to sit that was relatively secluded. Another difficulty was to find pregnant adolescents willing to participate. It was nearly impossible to find adolescent patients during working clinic hours (9 a.m.-12 p.m.). We later found out that pregnant adolescents come early (7 a.m.) mostly because they were brought by their husbands who had to later go to work.

Concerning the limitations of this study, one limitation is that it is a convenience basis sample which may not be entirely representative of the whole population, yet we can safely state that the results give an estimate of the frequency and highlight areas for future research. Another potential limitation is the relatively small sample size which might explain the unexpected results obtained. In addition, the long screening tools used which seemed to bore some participants. This may have led to the over-reporting or underreporting of events/ symptoms. Despite these limitations, the results of this study have implications for improving our understanding of psychiatric symptoms that might arise in pregnant adolescence/ adults and their seriousness, likewise, our clinical scope as regards the possibility of diagnosing psychiatric disorders early on and accordingly providing early intervention for a possible better outcome for the mother and the child.

Conclusion & Recommendations

Women suffer from psychiatric symptoms that sometimes mount to disorders and they do not seek professional help, regardless of their age. The administration of a

screening tool to identify women at risk during pregnancy should be universal practice to promote the long-term wellbeing of mothers and babies. The need for perinatal mental health services in primary health care units and obstetric antenatal clinics for screening of pregnant women and psychoeducation to avoid the consequences of undiagnosed and untreated cases must be available. A psycho-educational program should be compulsory for patients and families especially targeting pregnant adolescents to help them through the rapid role transitions they experience. There is a need for future research to explore teen pregnancies in Egypt including different socio-economic standards with larger sample sizes, shorter screening tools with follow-up research in each trimester and post-partum and after several years.

Author Contribution Statement

This article is based primarily on Maie Hilmy's MD dissertation. All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Maie Hilmy. The first draft of the manuscript was written by Maie Hilmy, and all authors commented on previous versions of the manuscript. The review and editing of the manuscript were done by Walaa Amin Fakhher. The process was supervised by Sanaa Ahmed Ali, Lamis Ali El-Ray, Heba Fathy Abdel Reheem & Waleed Mamdouh El-Khayat.

Data Availability

The data that support the findings of this study are available from the corresponding author, [M.H.], upon reasonable request.

Statements and Declarations

Declaration of Interest: All authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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