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Negative life events and maternal mental illness: A study of elite pregnant women in Accra metropolis

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ABSTRACT

The vulnerability of maternal mental illness (MMI) such as anxiety and depression among childbearing women is heightened during the periods of pregnancy mainly because of negative life events (NLEs). However, a major caveat in the literature relates to the overwhelming focus on women from disadvantaged socioeconomic background. Little is known about NLEs and MMI among women with relatively better socioeconomic background and high educational status, termed in this study as elite pregnant women. The study investigates the prevalence of NLEs and MMI (i.e., depression and anxiety) as well as the relationship between NLEs and MMI among elite pregnant women. A cross sectional survey design was used to collect data from 210 respondents recruited from three purposively selected health facilities in Greater Accra metropolis, namely Nyaho Medical Centre, Pentecost Hospital and Abokobi Health Centre. Self-report measures of NLEs, depression and anxiety were administered to the respondent. Data were analyzed using both descriptive statistics and inferential statistics, namely Pearson correlation and hierarchical linear regression. The study revealed that majority (n = 136, 64.8 %) of the respondents experienced at least particular NLEs and rated these events as stressful. The prevalence of symptoms of anxiety and depression were 42.4 % and 51.0 %, respectively. NLEs significantly and positively correlated with symptoms of anxiety but not with depression. Elite pregnant women are at risk of NLEs which can significantly influence their mental health. It is recommended that midwives and other health professionals pay attention to the NLEs of elite pregnant women for necessary support and intervention.

1. Introduction

Multiple studies have revealed that the vulnerability of women to mental illnesses such as anxiety and depression is heightened during the periods of pregnancy (i.e., prenatal) and after delivery (i.e., postnatal) (Ajinkya et al., 2013; Divney et al., 2012; Verbeek et al., 2015). Maternal mental illness (MMI) has been identified as the third most prevalent and disabling condition affecting women of childbearing age (Pas and De, 2017; Souza et al., 2010). Globally, the prevalence of prenatal depression in childbearing women reportedly ranges from 3.9 % to 80 % (Ajinkya et al., 2013; Al-Modayfer et al., 2015; Mossie et al., 2017; Upadhyay et al., 2017; Varsha et al., 2017), whereas anxiety disorder is estimated to affect 15.6 % to 42.9 % of pregnant women (van Heyningen et al., 2017). In sub-Saharan Africa, the prevalence of depression ranges from 10.3 % to 47 % (Bindt et al., 2012; Marcano-Belisario et al., 2017; Weobong et al., 2014). With respect to Ghana, depression reportedly affect 8 % to 27 % of childbearing women (bring two of the studies in the table here), whereas the prevalence of anxiety disorder was estimated to range from 8.9 % to 11.4 % (Bindt et al., 2012; Boakye-Yiadom et al., 2015; Guo et al., 2013; Weobong et al., 2014).

MMIs have profound negative consequence for child bearing women, the fetus/baby, the family, community and the nation as a whole (Groves et al., 2012). With respect to the mother, the consequences include pre-eclampsia leading to pre-term delivery, higher rates of substance misuse during and after pregnancy, sleeplessness, poor dieting leading to anemia in pregnancy, difficulty maintaining personal hygiene, poor adherence to treatment regimen, and difficulty initiating and maintaining breastfeeding after delivery (James et al., 2018; Kidwai et al., 2014). The documented effects on the foetus include low birth weight (Voges et al., 2020) and reduced intra-uterine fetal growth (Van den Bergh et al., 2020). Whereas the effects for childhood and adolescent include early childhood depression, low intelligent quotient leading to poor academic performance and school absenteeism, growth retardation (Biaggi et al., 2016; Sumankuuro,et al., 2017; Wemakor &

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Mensah, 2016). Neurosis, sleeplessness and eating disorders- binge eating and anorexia nervosa (Mohsenzadeh et al., 2017; Rajyaguru et al., 2021; Mohsenzadeh et al., 2017). Likewise, the economic burden of MMI remains a concern for health care analysts, patients and family members of women with MMIs. In the United Kingdom, for example, Bauer et al. (2014) estimated that the long term cost of treating MMI of any kind per year is £8 billion. The foregoing calls for efforts to systematically interrogate factors contributing to MMI for an informed interventions and prevention programs.

Several risk factors of MMI have been identified, including chemical imbalance, genetic vulnerability, unemployment and financial worries during pregnancy (Faisal-Cury, Savoia, & Menezes, 2012; Prost, Lakshminarayana, Nair, Tripathy, & Copas, 2012). More importantly, majority of the risk factors of MMI are externally produced. These factors, collectively called negative life events (NLEs), increase an individual's biological or genetic predispositions to mental health problems and have consequently received enormous empirical attention with respect to MMI (Alvarenga & Frizzo, 2017; Hochwälder, 2013; Phillips et al., 2015; Yilmaz et al., 2015).

NLEs are sudden, dramatic experiences that have the likelihood to meaningfully alter one's life. Among the notable NLEs are sexual abuse, financial difficulties, death of loved ones and marriage separation, partner violence, sickness, divorce, poor socio-economic status and teenage pregnancy. Several studies revealed that NLEs are associated with the onset of MMI (Girz et al., 2017; Guang et al., 2017; Wang et al., 2016a; Wang et al., 2016b; Yue, 2016). The scale of the negative consequences of NLEs on MMI have prompted empirical research with the hope of unearthing the supposed complex relationship between NLEs and MMI among pregnant women. Although the emerging studies from Ghana and studies conducted elsewhere (Alvarenga & Frizzo, 2017) have provided useful insight into MMI, a major caveat in the literature relates to the overwhelming emphasis on vulnerable groups such as women from disadvantaged background. This include women who are unemployed and have low or no education. The poor and impoverished background of this vulnerable population could contribute to the reports of high mental health and psychological issues among them. This raises the possibility that the background of the population of prior studies could obscure the true representation of mental health and psychological issues among women of childbearing age. This is particularly plausible given that existing studies have established robust association between vulnerable background and mental health problems (Wang et al., 2016). In contrast, studies investigating MMI from women who may not be classified as vulnerable, given their background, are extremely limited. These are women from relatively better socioeconomic background, are employed and high educational status. These women are termed in this study as elite pregnant women. The marked differences in the background and social status of vulnerable and elite (women who are highly educated and gainfully employed) pregnant women suggest that findings obtained from vulnerable pregnant women may not be generalized to elite pregnant women. This observation provides the impetus to investigate NLEs and MMI in elite pregnant women. To illustrate, whereas vulnerable pregnant women are more likely to be economically disadvantaged, elite women, by virtue of working or being married to "successful men", may not be stressed financially during the pregnancy period. In the same manner, elite pregnant women who drive to and from work may rate the driving behavior differently from vulnerable pregnant women who mostly travel with commercial vehicles. To date, relatively little is known about whether elite pregnant women experience NLEs and how they rate these events in relation to their pregnancy.

2. Methods

2.1. Setting and participants

The study was conducted at three different hospitals in the Greater Accra Metropolis in Ghana namely, Nyaho Medical Centre (NMC), Pentecost Hospital Madina and Abokobi Health Centre. Nyaho Medical Centre is one of renounce private health care centres in Accra with state of the art facilities established in 1970, aimed at providing highest international standard of care to its clients. It is located at Roman Ridge, Accra North and surrounded by 24 towns including Dzorwulo and Airport Residential area all within Accra metropolis. Most inhabited by wealthy Ghanaians, academics, government officials, and ex-patriates. Abokobi Health Centre is located in the Ga East District in the Greater Accra Region. Abokobi Health Centre is a Government health care institution and surrounded by four towns, and eight villages. The inhabitants are farmers with few number of traders, public or casual laborers. Pentecost Hospital Madina, formally called Alpha Medical Centre. The hospital is the largest Christian Health Association of Ghana (CHAG) facility in the Greater Accra Region. The facility is located in the Madina Estate, in La Nkwantanang district of Greater Accra region. The hospital is surrounded by eight communities, the inhabitants engages in four main economic activities namely commerce, agriculture, service and manufacturing. These facilities were purposively selected due to the fact that they are among the health facilities that recoded high antenatal attendant within the Accra Metropolis. Moreover, the locations of these facilities make them accessible to low, middle and high-income class of population. Data were collected from 210 elite pregnant women who were recruited for the study. The inclusion criteria for the study were: (1) Graduates of any tertiary educational institution (2) employment in the formal sector such as schools, hospitals banks and other formal sectors; (3) pregnant woman in their various trimesters (1st, 2nd, and 3rd) and accessing antenatal services at the aforementioned health facilities (4) at least 18 years of age and above (5) should be willing to give informed consent. The exclusion criteria adopted were (1) pregnant women with severe pregnancy complications such as pre-eclampsia, and diabetes, (2) pregnant women with (previous) history of mental health problem and (3) pregnant women who are hospitalized for psychiatric treatment.

3. Research design and procedure

A cross-sectional self-report study design was employed to collect data from the respondents. Institutional permission was obtained from the administrators of the various health facilities. The respondents were recruited from various antenatal units using convenience sampling approaches. This is a non-probability sampling technique in which respondents are recruited based on their availability and willingness to partake in the study (Stratton, 2021). The research team visited the various facilities mentioned above to explain the purpose of the study to the respondents, as well as their role in the study. Ethical issues in relation to research was well explained and ensured. For example, anonymity was ensured by not indicating their names on the questionnaire. They were assured of confidentiality by not allowing anyone, other than the research team, to have access to their responses. The respondents were informed about their voluntary withdrawal from the study at any point in time without suffering any consequences. In every facility, the nurse manager and the head of the antenatal unit, together with the midwives, were informed to help identify the likely respondents. The research team joined the midwives at the registration table to recruit the willing and qualified respondents for the study. This was done by observing their demographic data, especially their educational background, those with at least tertiary level of education (diploma and above) and were gainfully employed in the formal sector were recruited. Individuals who agreed to partake in the study were made to understand that, participation was purely voluntary and no incentive will be provided. Later, they were asked to sign the voluntary agreement form, followed by giving them questionnaire to fill which they returned to the research team upon completion. Of the two hundred and fifty (250) questionnaires administered, two hundred and ten (210) were completed and returned to the research team indicating 84

% response rate.

3.1. Study measures

General Anxiety Disorders Scale (GADS – 7, Spitzer, Kroenke, Williams, & Löwe, 2006). This scale was administered to measure symptoms of anxiety among the respondents. The GAD-7 scale is a seven (7) item self-reported measure that elicits the feelings of apprehension, tension and nervousness within the previous two weeks. The GAD-7 scale does not provide a diagnosis of clinical anxiety, but rather measures the presence of anxiety symptoms. It is rated on four points-Likert scale ranging from 0 (not at all) to 3 (to nearly every day). The total score on the scale ranges from 0 to 21, with higher score indicating higher level of anxiety symptoms. The scale has a cutoff point of 5 ≥ 10 ≥ and ≥ 15 suggesting clinically significant symptoms of anxiety. The GAD-7 has been found to have good psychometric property ranging from 0.75 to 91 (Omani-Samani et al., 2018). In the current study a Cronbach's alpha coefficient of 0.80 was obtained.

Edinburgh Postnatal Depression Scale EPDS (Murray & Cox, 1990). The EPDS was used to assess for symptoms of depression. The EPDS is 10-items self-rating instrument with each items scored from 0 to 3. The total score on the scale ranges from 0 to 30, with higher score indicating presence of symptoms of depression 13 (Cox et al., 1987). The EPDS has been used extensively by other researchers for similar studies around the globe, including Ghana. The scale has been validated as a standardized tool for investigating symptoms of depression during pregnancy with reported coefficient alpha ranging from 0.71 to 0.87 (Bunevicius, Kusminskas, Pop, Pedersen, & Bunevicius, 2009). In the current study, Cronbach's alpha coefficient of 0.72 was obtained.

Life Events Scale for Obstetric Group (Barnett et al., 1983). The scale was used to index the experiences of negative life events among the respondents. It consists of 54 items that measure both positive and negative life events in the obstetric women's life. The NLEs components of the scale, which was used in this study comprised 24 items, which include the death of a closed relation (family, friends, and spouse) and differences in the sex of a child in the uterus. It measures an event that happened during the period of pregnancy, and was rated on a 10 point Likert scale, ranging from 0 (Not distressing at all) to 10 (very distressing). The scale has been used by previous studies and has been found to be internally consistent (Girz et al., 2017). The questionnaire was modified by adding yes/ no to help the respondent to indicate whether the event had occur or not occur. Cronbach's coefficient alpha of 0.78 was obtained for the current study. The responses were recoded such that 0 to 5 point on the scale was rated 'no' (not distressing) and 6 to 10 was also rated 'yes' (distressing) (Biaggi et al., 2016; Bratt et al., 2018).

3.2. Statistical analysis

Data collected from the survey were analyzed using Statistical Package for Social Sciences version 20.0, with two-tailed significance and Alpha level set 0.05, unless otherwise specified. Both descriptive statistics, namely frequencies and percentages, and inferential statistics (i.e., Pearson's Product Moment Correlation Coefficients) analyses were done. Assumption of normality was tested using SPSS Explore procedure Data that did not follow normal distribution assumption were subsequently transformed using log transformation to ensure better organization of data and perfect interpretation of results (Lee, 2020). Relationship between the individual variables; thus independent variable (NLEs), dependent variables (anxiety and depression) were determine using Pearson's Product Moment Correlation Coefficients.

4. Results

4.1. Demographic characteristics of respondents

The mean age of the respondents was approximately 31 years (SD = 19.50). Of the 201 respondents, the majority (n = 141, 67.1 %) were married, whereas the rest were single (n = 69, 32.9 %). Slightly over half of the respondents (n = 111, 52.9 %) had lower level of education (i.e., diploma), whereas 99 (47.1 %) had higher level of education (i.e., Undergraduate degree and above). Similarly, 31.4 % (n = 66), 56 (26.7 %) and 88(41.9 %) of the respondents were in their first, second and third trimesters of pregnancy, whereas 36 (17.1 %) were in 36 weeks and above. The majority of the respondents were Christians (n = 162, 77.1 %). A total of 72 (34.3 %), 68 (32.4 %), and 70 (33.3 %) respondents earned between below GH¢1000 (low-income group), GH¢ 2000 – GH¢ 4,999 (i.e., middle-income group) and GH¢5000 and above (i.e., high-income group) respectively.

4.2. Prevalence of maternal mental illness and negative live events

Of the 210 respondents, 89(42.4 %) reported moderate or high levels of anxiety symptoms, while 121(57.6 %) reported no or low symptoms of anxiety. Likewise, more than half of the respondents (n = 107, 51 %) reported moderate/ high symptoms of depression. With respect to NLEs, a total of 136 (64.8 %) of the respondents indicated they did not experience any forms of NLEs during pregnancy. In contrast, 74 (35.2 %) of the respondents reportedly experienced at least one NLEs during their pregnancy period. These individuals also indicated that the NLEs they experienced were stressful to them.

4.3. Prevalence of individual negative life events

The results of the analyses relating to the prevalence of individuals NLEs are presented in Table 1. As can be observed, problem in sexual relationship, major financial crisis and severe vomiting, recurring urinary tract infections during pregnancy, seriously ill during pregnancy, high blood pressure, stopping work, medical complications, unwanted pregnancy, and increasing argument with mothers were among the most experienced NLEs.

4.4. Relationship between negative life events and maternal mental illness

The relationship among the study variable (i.e. NLEs, MMI and Coping) is summarized in Table 2. The result shows that there was a significant moderate positive correlation between depression and anxiety (r = 0.52, p < 0.001) and a significant but weak positive correlation between anxiety and NLE (r = 0.17, p < 0.013). However, there was no significant correlation between depression and NLEs (r = 0.07, p = 0.306). There was a moderate significant positive correlation between coping and anxiety (r = 0.343, p < 0.001) and a significant positive correlation between coping and depression (r = 0.24, p < 0.001). No significant correlation was observed between coping and NLEs (r = 0.01, p < 0.165).

5. Discussions

The existing literature is dominated by insight into the NLEs experienced by pregnant women from disadvantaged background characterized by conditions such as unemployment and poor or no housing. Consistent with previous studies (Mukherjee et al., 2017), this study found that elite (women who are highly educated and gainfully employed), pregnant women from relatively good socioeconomic background and with relatively high formal education do experience NLEs when they are pregnant. These include recurrent urinary tract infection, unwanted pregnancy, illness during pregnancy, major financial crisis, problems in sexual relationship and partner became

Table 1
Endorsement of Individual Negative Life Events.

Items	Occurrence of Events	
	n (%)	*n* (%)
Responses	Event not occurred	Event occurred
You almost miscarried after 3 months	111(52.9 %)	99 (47.1 %)
You were seriously ill during pregnancy	76 (36.2 %)	134 (63.8 %)
Your husband/ partner became unemployed	100 (47.6 %)	110 (52.4 %)
You almost miscarried before 3 months	105 (50.0 %)	105 (50.0 %)
You had pregnancy terminated (during the past 12 months)	120 (57.1 %)	90 (42.9 %)
Increase serious arguments developed with your mother	100 (47.6 %)	110 (52.4 %)
Someone close (in the family or outside) developed a serious illness	111(52.9 %)	99 (47.1 %)
Medical complication arose during pregnancy	93 (44.3 %)	103 (55.7 %)
A major financial crisis	78 (37.1 %)	132 (62.9 %)
You were pregnant and your partner did not want you be	109 (51.9 %)	101 (48.1 %)
You have a difficulty arranging for to look after family whilst in hospital	119 (56.7 %)	91 (43.3 %)
You miscarried during the past 12 months	126 (60.0 %)	84 (40.0 %)
You were involved in legal action which could have damaged a reputation	131(62.4 %)	79 (37.6 %)
You had an X-ray during the pregnancy	127 (62.4 %)	79 (37.6 %)
Increasingly serious argument developed with your in-law	127 (60.5 %)	83 (39.5)
You had a serious illness or were badly injured and had to be off work and or in a hospital for at least a month	122 (58.1 %)	88 (41.9 %)
You had blood pressure trouble	118 (56.2 %)	92 (43.8 %)
There were problems in the sexual relationship during the pregnancy	97 (46.2 %)	113 (53.7 %)
You had recurrent urinary tract infection	73 (34.8 %)	137 (75.2 %)
You found out you were pregnant and you did not want to be	69 (32.9 %)	141 (67.1 %)
You had severe vomiting/ morning sickness	91 (43.3 %)	119 (56.7 %)
You move to new house	102 (48 %)	108 (51.2 %)
You stopped work	102(48.6 %)	108 (51.4 %)
Your baby was not the sex you hope for	132(62.9 %)	78 (37.1 %)

Table 2
Correlation Matrix and Descriptive Statistics of Study Variables.

	Depression	Anxiety	Negative Life Event
Depression	–		
Anxiety	0.52**	–	
Negative Life event	0.06	0.17*	–
Mean	11.19	5.15	0.35
SD	5.53	4.41	0.48
Range	1.00	0.42	1.00
Cronbach's Alpha	0.72	0.80	0.78

*$p < 0.05$; ** $p < 0.01$, SD = standard deviation.

unemployed. Indeed, some NLEs are not necessarily dependent on the socioeconomic background of pregnant women. These include urinary tract infection and illness during pregnancy. Urinary tract infection occur mainly because the uterus sits on and compress the bladder, thereby preventing free flow of urine (Elzayat et al., 2017). Lack of contraceptive use during sexual intercourse could also increase the chance of unplanned or unwanted pregnancy; an observation that is independent of the socio demographic background of women.

The finding relating to the prevalence of anxiety symptoms in the elite pregnant women is highly consistent with the prevalence of symptoms of anxiety disorders among the general population of pregnant women reported elsewhere (Silva et al., 2017; Waqas et al., 2015). Anxiety was found to be higher among the young unmarried and first time pregnant mothers especially. As reported by previous studies, unmarried women and/or first time pregnant women are more likely to lack partner support, experience, unwanted or unplanned pregnancies and financial crisis (Biaggi et al., 2016). The finding that the majority of the respondents reported either no or low anxiety symptoms could probably be attributed to their social and economic status which may serve as a buffer. Besides, there is the possibility that majority of the respondents have planned for their pregnancies, have some appreciable social support from their partners and/or benefited from the pregnancy school conducted at the antenatal clinics. The pregnancy schools are intended to equip and empower childbearing women to cope with pregnancy and related issues. In contrast, the symptoms of depression appeared to be high, consistent with previous findings (Varsha et al., 2017). This partly suggest that the prevalence of depression during pregnancy could be similar, regardless of the socioeconomic background of childbearing women and geographical location.

Consistent with the extant literature, the current study find that, depression and anxiety correlated significantly. The finding is in consistent with Kalin (2020) who reported that both antenatal anxiety and depression are highly correlated, and the two constructs coexist. That is, there is a successiveness in the development of anxiety and depression response (Guardino & Schetter, 2014; Ireland et al., 2014).

6. Limitation of the study

The study findings should be evaluated in light of the following limitations. First, the data were collected from relatively small number of respondents ($n = 210$) in only three health care facilities within the Greater Accra Region, which is only one region out of the sixteen regions in Ghana. This means that the findings may have limited utility beyond the aforementioned institutions. In addition, self-report measures, which is subject to social desirable effect were used to collect data., There is the tendency of bias in the data gathered and the information might not be the true reflection of what the respondents may have experienced. Moreover, the use of cross-sectional design does not allow room for establishing cause and effect relationship.

7. Implications and conclusion

There is evidence of somewhat high prevalence rate of NLEs and MMI (anxiety and depression symptoms) among elite pregnant women. The NLEs experienced by the elite pregnant women are not necessarily different from those encountered by women from disadvantaged socioeconomic background, suggesting universality with respect to NLEs. Consistent with the existing literature, the experience of NLEs correlated significantly with MMI in the elite pregnant women. The prevalence of MMI revealed by the study may probably be as the consequences of staff (midwives) not having adequate knowledge on identifying symptoms of MMI (Adjorlolo et al., 2019) and also the tendency to gloss over the experience of NLEs by elite pregnant women. The finding therefore suggest that health professionals providing maternal services to elite pregnant should pay attention to the possibility that they may be experiencing some NLEs that may impact on their mental health and wellbeing. This means that health professionals should be competent and knowledgeable about basic issues relating to MMI and support for childbearing with mental health issues.

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9. Ethical approval details

The study received ethical clearance from Noguchi Memorial Institute of Medical Research, University of Ghana (NMIMR-IRB CPN 039/18-19).

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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