# The burden of antenatal anxiety: A cross-sectional study of prevalence and selected risk factors among antenatal women in a government hospital in the Colombo district

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(Key words: antenatal anxiety, anxiety, mental health screening, pregnant women)

## Abstract

*Introduction:* Pregnancy is a challenging period for both the physical and mental health of a woman, increasing her vulnerability to mental health conditions during this period. Antenatal anxiety is one such overlooked condition which can result in adverse outcomes to both mother and child, as well as to their family and larger society.

*Objective:* This study assessed the proportion of antenatal anxiety and factors associated with it among 122 women attending antenatal clinics at a government hospital in the Colombo district.

*Methods:* A descriptive cross-sectional study was conducted among systematically sampled pregnant women attending antenatal clinics. Their level of antenatal anxiety was assessed using the Perinatal Anxiety Screening Scale. An interviewer administered questionnaire was used to collect information on selected socio-demographic, family-related, current pregnancy-related, previous pregnancy-related, health-related factors, and coping skills of the participants.

*Results:* Overall antenatal anxiety among the participants was 42.6%. Among the correlates studied for association with antenatal anxiety, only maternal age, educational level, pregnancy-related medical conditions, younger age of partner, and the women's choice of coping skills showed a statistically significant association.

*Conclusions:* The high proportion antenatal anxiety in pregnant women calls for further research into this mental health condition, exploring in-depth through mixed methods studies, and also examine cultural appropriateness of current anxiety scales to assess anxiety in pregnant women. It is important that clinicians assess pregnant women during routine care for such anxiety as well as consider implementing evidence-based psychosocial interventions as a preventative strategy.

## Introduction

Pregnancy is associated with profound physical, psychological, and social changes. It poses a vast number of challenges to an expectant mother, including to her health. Mental health is an integral component of health. Maternal mental health is a state of well-being in which a mother realizes her abilities, can cope with the common stressors of life, can work productively and fruitfully, and can contribute to her community [1]. Hence, expectant women require the ability to cope with stressors during this critical period of their life, if a positive experience is to be achieved for themselves, their unborn child, their families, and their community.

Antenatal depression has been the worldwide focus in mental health disorders among expectant women [2]. However, anxiety disorders, eating disorders, and personality disorders are associated with substantial morbidity in pregnant women too [2]. In fact, antenatal anxiety and related disorders, which are frequently comorbid with depression, merit attention like that given to antenatal depression [3].

Anxiety is a common mental health problem characterized by a subjective feeling of tension, and cognitions that involve apprehension and worry [4]. An anxiety response is often disproportionate to the

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perceived threat. Though it could be adaptive in certain instances, anxiety has the potential to cause distraction from the problem at hand to insignificant concerns. Therefore, prolonged anxiety during pregnancy can be disruptive. Antenatal anxiety incorporates state, trait, and pregnancy-related anxiety [4]. State anxiety is a transient feeling of worry and fear in response to a stressful event whereas trait anxiety is an aspect of an individual's personality [4]. Pregnancy-related anxiety refers to a distinct form arising due to causes specifically experienced in the antenatal period. Worries of expectant mothers, that focus on aspects such as maternal and infant health, the birthing process, appearance-related concerns, and the perceived ability in parenting are the key features of pregnancy-related anxiety [5]. Despite it being generalized or pregnancy-related, it causes an increased risk of pregnancy-related complications and adverse birth outcomes such as pre-term birth, intra-uterine growth restrictions, low birth weight [6] and suicide ideation [7]. Whilst antenatal anxiety is widely identified as a risk factor for post-partum depression [8], it has biological, psychological, behavioural, and medical effects on her offspring too [9].

Studies on antenatal anxiety in high-income countries indicate a prevalence of 10-15% of perinatal mental health illnesses while that of low and middle-income countries ranges from 10-41% [10]. However, there is a scarcity of studies from low and middle-income countries compared to their high-income counterparts. Moreover, cultural factors tend to impact the well-being of pregnant women, where specifically in the context of mental health disorders, low- and middle-income countries tend to be largely affected by socio-cultural factors such as economic deprivation, lower levels of education, and gender inequity [10]. Therefore, there is a clear knowledge gap regarding antenatal anxiety in the Sri Lankan context, which needs to be bridged when developing strategies to detect, treat and prevent this condition.

## Methods

The present study used a cross-sectional design. The study population were pregnant women attending antenatal clinics at a major maternity hospital in the Colombo district of Sri Lanka. Administrative clearance was obtained from the hospital director along with the permission of the consultants of the antenatal clinics held there. Participants under 18-years or with a previously diagnosed mental health disorder were excluded. Systematic sampling recruited 122 participants. The response rate was 100%. Data was collected through a questionnaire-based interview carried out in a separate room in the clinic, ensuring confidentiality of the information provided. The participants answered in their language of choice.

### Data collection instruments

Three instruments were used:

1) The 31-item globally used instrument, Perinatal Anxiety Screening Scale (PASS), assessed antenatal anxiety. PASS's Sinhala validated version was used [11]. For a Tamil language version, the authors used the back translation method on its original English version. Each PASS item enquires about the presence of anxiety symptoms during the preceding one month which is scored on a Likert scale ranging from 0 (not at all) to 3 (almost always). The original PASS cut-off ≥21 [11] was used. As reported in the original validation study [20], a total score between 0 and 20 is considered "asymptomatic", 21-41 as "mild-moderate anxiety" and 42-93 as "severe anxiety".

2) An interviewer-administered questionnaire, designed for this study, collected information on selected socio-demographic factors, family-related factors, current pregnancy-related factors, previous pregnancies-related factors, and participant coping skills.

3) The validated Coping Scale was used to assess the level of coping [13]. Consisting of 13 items, it assesses cognitive, emotional, and behavioural methods of dealing with problems, and each answer is assigned a value from 1-4. Higher scores indicate a healthier level of coping. The cut-off mark is 26. This scale included items such as "When dealing with a problem, I spend time trying to understand what happened". The authors used the back translation method on the original English version of the scale to obtain its Sinhala and Tamil versions for this study.

## Results

The participants' age ranged from 18- to 39-years (mean age = 27.2 years), with the highest proportion being in the ≤25-years age group. Most were Sinhalese (52.5%) Buddhist (43.4%). A large proportion had passed the Ordinary Level examination (52.5%), most were unemployed at the time of the study (77%), were from the Colombo district (73.8%), and were multigravida (54.9%).

### Rate of antenatal anxiety

Most participants (57.4%) were asymptomatic of anxiety. However, a large portion (42.6%) reported anxiety symptoms, out of which a greater number were in the mild-moderate anxiety category (37.7%) whilst only 4.9% had severe symptoms.

### Selected factors associated with antenatal anxiety

Bivariate analysis using Chi-square tests indicated that the socio-demographic factors that showed a statistically significant association with antenatal anxiety were age (i.e., younger the woman, more the anxiety) and

the level of education (i.e., lower the education, higher the anxiety). None of the other socio-demographic factors had a significant association (see Table 1).

Partner's age (i.e., younger the partner, more anxiety), partner's alcohol consumption and smoking status and satisfaction with the support received from the extended family were significant predictors of antenatal anxiety too. However, partners' preference regarding child's gender was not significantly associated (see Table 2).

Planned versus unplanned nature of the pregnancy, trimester of pregnancy, nor gravidity, was statistically associated with antenatal anxiety. Moreover, pre-eclampsia, gestational diabetes mellites, vaginal bleeding, morning sickness nor anaemia, was significantly associated with antenatal anxiety either.

The association between selected factors related to previous pregnancies (i.e., previous miscarriages/ stillbirths and previous preterm births) and current antenatal anxiety were also not statistically significant. Further, none of the pregnancy-related medical conditions in previous pregnancies had a significant association with current antenatal anxiety. The mode of delivery of previous babies was also not a significant predictor of antenatal anxiety in the current pregnancy.

**Table 1. Association of selected socio-demographic factors with antenatal anxiety**

| *Socio-demographic factors* | *Without antenatal anxiety symptoms* | | *With mild-moderate antenatal anxiety symptoms* | | *With severe antenatal anxiety symptoms* | | *Significance* $\chi^2$ *df* |
|---|---|---|---|---|---|---|---|
| | *Frequency* | *Percentage %* | *Frequency* | *Percentage %* | *Frequency* | *Percentage %* | *p-value* |
| **Age (yrs.)** | | | | | | | |
| ≤25 | 18 | 40.9 | 24 | 54.5 | 2 | 4.5 | $\chi^2$ =8.45 |
| >25 | 52 | 66.7 | 22 | 28.2 | 4 | 5.1 | df=2 p-value=0.017 |
| **Ethnicity** | | | | | | | |
| Sinhalese | 41 | 64.1 | 21 | 32.8 | 2 | 3.1 | $\chi^2$ =2.78 df=2 p-value=0.018 |
| Non-sinahlese | 29 | 50.0 | 25 | 43.1 | 4 | 6.9 | - |
| **Religion** | | | | | | | |
| Buddhist | 34 | 64.2 | 18 | 34.0 | 1 | 1.9 | $\chi^2$ =2.85 |
| Non-buddhist | 36 | 52.2 | 28 | 40.6 | 5 | 7.2 | df=2 p-value=0.16 |
| **Employment status** | | | | | | | |
| Employed | 17 | 63.0 | 7 | 26.0 | 3 | 11.1 | $\chi^2$ =4.17 |
| Unemployed | 53 | 55.8 | 39 | 41.1 | 3 | 3.2 | df=2 p-value=0.14 |
| **Highest level of education** | | | | | | | |
| Upto GCE O/L or below | 35 | 49.3 | 32 | 45.1 | 4 | 5.6 | $\chi^2$ =4.55 |
| Above GCE O/L | 35 | 68.6 | 14 | 27.5 | 2 | 3.9 | df=2 p-value=0.18 |
| **Monthly household income** | | | | | | | |
| ≤ Rs.40 000 | 23 | 58.9 | 12 | 30.8 | 4 | 10.3 | $\chi^2$ =4.08 |
| >Rs.40000 | 47 | 56.6 | 34 | 41.0 | 2 | 2.4 | df=2 p-value=0.13 |

**Table 2. Association of selected family-related factors with antenatal anxiety**

| *Socio-demographic factors* | *Without antenatal anxiety symptoms* | | *With mild-moderate antenatal anxiety symptoms* | | *With severe antenatal anxiety symptoms* | | *Significance* $\chi^2$ *df* |
|---|---|---|---|---|---|---|---|
| | *Frequency* | *Percentage %* | *Frequency* | *Percentage %* | *Frequency* | *Percentage %* | *p-value* |
| **Age of the partner(yrs.)** | | | | | | | |
| ≤25 | 4 | 26.7 | 7 | 46.6 | 4 | 26.7 | $\chi^2$ =19.62 |
| >25 | 66 | 61.7 | 39 | 36.4 | 2 | 1.9 | df=2 p-value=0.000 |
| **Alcohol consumption of partner** | | | | | | | |
| Yes | 26 | 63.4 | 10 | 24.4 | 5 | 12.2 | $\chi^2$ =9.94 |
| No | 44 | 54.3 | 36 | 44.4 | 1 | 1.3 | df=2 p-value=0.007 |
| **Smoking status of partner** | | | | | | | |
| Yes | 9 | 47.4 | 7 | 36.8 | 3 | 15.8 | $\chi^2$ =7.91 |
| No | 61 | 59.2 | 40 | 38.8 | 2 | 2.0 | df=2 p-value=0.017 |
| **Partner's preference regarding child's gender** | | | | | | | |
| Male / Female | 32 | 54.2 | 24 | 40.7 | 3 | 5.1 | $\chi^2$ =0.47 |
| No preference | 38 | 60.3 | 22 | 34.9 | 3 | 4.8 | df=2 p-value=0.786 |
| **Satisfaction regarding support received from partner** | | | | | | | |
| Satisfied | 66 | 57.9 | 43 | 37.7 | 5 | 4.4 | $\chi^2$ =1.08 |
| Dissatisfied | 4 | 50.0 | 3 | 37.5 | 1 | 12.5 | df=2 p-value=0.672 |
| **Satisfaction regarding support received from extended family** | | | | | | | |
| Satisfied | 69 | 62.2 | 38 | 34.2 | 4 | 3.6 | $\chi^2$ =13.17 |
| Dissatisfied | 1 | 9.1 | 8 | 72.7 | 2 | 18.2 | df=2 p-value = 0.000 |

df = degrees of freedom

### Coping skills and antenatal anxiety

There was a statistically significant association between coping skills and antenatal anxiety, where a higher proportion of pregnant women who had healthier coping skills had no antenatal anxiety (68.8%).

## Discussion

42.6% of women attending antenatal clinics at a major maternity hospital in Sri Lanka was screened for antenatal anxiety. This is a considerable proportion. Two similar Sri Lankan studies which investigated potential changes in the trend of antenatal mental health and associated factors during the first and second waves of COVID-19, using the Hospital Anxiety and Depression Scale (HADS) reported the prevalence of antenatal anxiety as 17.5% and 17%, respectively [14,15] – their first study was conducted in another major maternity hospital in Colombo [14] and the second in the same setting as ours [15]. The rates of their studies were much lower than ours, possibly due to the differences in the sample size and the instrument used. Nevertheless, the higher rate of antenatal anxiety in our study indicates an escalation of anxiety among expectant women and we hypothesise that it may

well be because our study was conducted during a major socio-economic crisis in Sri Lanka, in the quick aftermath of the COVID-19 pandemic, which might have further compounded the anxiety levels. In fact, a study in Hong Kong reported 54% of women with antenatal anxiety [3] during a sociocultural crisis in that country. This may likely have been the context for the rates in our study too. Regionally, a similar cross-sectional study using the HADS reported 25% antenatal anxiety in two private hospitals in Karachi [17]. This lower rate compared to ours might be due to the comfort of higher economic status which can afford private medical care, unlike women in our study who depended on free government health services. However, socio-cultural factors could also be at play in these discrepancies as is seen in three separate studies conducted within one country, Pakistan, reporting 18%, 34.5% and 70% rates of antenatal anxiety [17,18,19].

Rates of antenatal anxiety in Western countries seem lower, as is reported from a large United States population-based study of 13% of any anxiety disorder in the currently pregnant or post-partum period [20]. This lower rate maybe because of the larger sample size than that in our study, because they had considered any anxiety disorder instead of only antenatal anxiety, and because the postpartum period was included as well. Further, the greater number of organizations in high-income countries that provide financial and mental health support for the needy as well their higher mental health literacy may have also contributed to the lower rates than that reported in Sri Lanka. Similar lower antenatal anxiety rates have been reported from other high-income countries too [21,22].

Literature on socio-demographic correlates of antenatal anxiety is scarce, hence the decision to explore some of these in our study. Younger age was significantly associated with antenatal anxiety in our study, possibly due to the paucity of life experience and the poorer level of perceived self-efficacy in younger expectant women. In contrast, regional studies from Bangladesh and Pakistan as well as from other countries such as China, Australia, and Nigeria, reported a significant association between increasing age and antenatal anxiety [19,23,24,25,26]. These variations might be due to the different socio-cultural backgrounds of each country. Our results also indicated that antenatal anxiety was significantly associated with educational level of expectant women. This may be because expectant women with a comparatively lower level of education maybe poorer with its resultant stress. They may also be poorer at understanding health-related information given by antenatal care facilities leading to higher levels of anxiety, as is reported from elsewhere in the world [23,24].

None of the other socio-demographic factors explored, such as ethnicity, religion, and employment status were associated with antenatal anxiety, re-establishing the findings of similar studies from Sri Lanka [15].

There were several family-related factors which emerged as significant predictors of antenatal anxiety. One of those was the partner's age, where younger the partner, more the woman's antenatal anxiety – this is a unique finding from our study, not corroborated by previous research. The authors hypothesize that as younger partners are more likely to be economically unstable and inexperienced in handling major life situations, pregnant women might feel anxious regarding the support that they can extend with the birth of the child. In fact, satisfaction with support from the partner and family is a well identified finding associated with lower antenatal anxiety [3,25,26]. Our study further revealed that the partners' smoking and alcohol consumption were noteworthy predictors of antenatal anxiety. While this association has not been reported in the Western literature, there were no similar reporting as that revealed in our study, within our region either [16].

Pregnancy-related medical conditions emerged as a significant predictor of antenatal anxiety. But when considering these medical conditions as individual variables, none of the pregnancy-related medical conditions showed a significant association with antenatal anxiety, unlike findings reported from elsewhere [24]. A possible explanation for this increased anxiety could be that having a medical condition during pregnancy may make the woman fear the baby getting affected by that condition too. However, a Sri Lankan study conducted during the second wave of the COVID-19 pandemic failed to identify a significant association between antenatal anxiety and pregnancy-related medical conditions [15]. The trimester and gravidity were not found to be significantly associated with antenatal anxiety in our study, corroborating results of a previous Sri Lankan study [14], but contradicting reports from other countries, particularly those from Africa [24,27]. This may be attributed to the cultural context of Sri Lanka where childbirth is considered a privilege. Interestingly, planned versus unplanned pregnancy was not associated with antenatal anxiety, which was contradictory to established worldwide data [16,17,21].

The current study found a significant association between the type of coping skills of expectant women and antenatal anxiety. Pregnant women with healthier coping skills were more likely to adapt and face the myriads of challenges that they come across during the perinatal period and beyond. Similar findings have been reported from elsewhere [24].

The current study intended to fill the knowledge gap regarding antenatal anxiety in the Sri Lankan context which has so far been overshadowed by a keen attention on perinatal depression. A wide variety of potential associated factors was hence studied in relation to antenatal anxiety. However, this study is not without limitations. Due to the cross-sectional study design, temporal relationships cannot not be established between antenatal anxiety and

the factors studied. Also, even though a comprehensive list of factors were studied under several domains, factors such as the pre-pregnancy personality, use of religious coping mechanisms, and perceived self-efficacy regarding motherhood, were not assessed in the current study. Furthermore, the smaller sample size from one hospital setting could lead to limitations in the generalisability of findings. The two main study instruments that assessed anxiety and coping are internationally used, with sound psychometric properties. However, the instrument that assessed anxiety was not validated to a Tamil speaking population, though it was validated to a Sinhala speaking population. Further, this Sinhala version, though validated, did not have Sinhala population specific cut-offs, because of which the cut-offs of the original scale was used. These too are limitations of the study.

## Implications

Despite these limitations, our study indicated that antenatal anxiety is considerably high in our study participants, compared to previous local and international studies. Hence, the authors emphasise the importance of clinicians involved in the care of expectant women to pay adequate attention to their mental health during routine antenatal care. Further, the factors that emerged in our study as significant predictors of antenatal anxiety can be considered as potential risk factors – these factors, as well as those identified in other studies, could be used to augment existing psycho-social interventions aimed at reducing antenatal anxiety. We also recommend further research to explore in-depth, both antenatal as well as perinatal anxiety, through mixed methods studies. And, an interesting area of study would be an exploration of the cultural appropriateness of current anxiety scales to assess anxiety in pregnant women.

### Authors contributions

All authors made a substantial contribution to conceptualize and design the study, to interpret the data critically for its intellectual validity, and to draft, review and finalise the manuscript. Data acquisition and analysis were carried out by the first three authors (TA, HA and AA) under the continuous guidance of the fourth author (PDZ).

### Competing interests

Authors declare no competing interests.

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### Ethics approval

The study obtained ethics approval from the Ethics Review Committee, Faculty of Medicine, University of Colombo.

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### Abbreviations

PASS - Perinatal Anxiety Screening Scale.

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