

# Factors Associated with Pregnancy-Specific Anxiety: A Study Conducted in Dakar

Sokhna Seck<sup>1,\*</sup>, Momar Camara<sup>2</sup>, El Hadji Makhtar Bâ<sup>3</sup>, Mouna Berkla<sup>1</sup>, Adama Coundoul, Racky Wade<sup>1</sup>, Ibrahima Ndiaye<sup>1</sup>, Papa Lamine Faye<sup>1</sup>, and Aida Sylla<sup>1</sup>

<sup>1</sup>Department of Psychiatry, Fann National University Hospital Centre, Dakar, Senegal

<sup>2</sup>Thiaroye Psychiatric Hospital, Emile Badiane Psychiatric Centre, Ziguinchor, Senegal

<sup>3</sup>Albert Royer Children's Hospital, Emile Badiane Psychiatric Centre, Ziguinchor, Senegal

\*Corresponding author: Sokhna Seck, Department of Psychiatry, Fann National University Hospital Centre, Dakar, Senegal, E mail: sooxnasec@yahoo.fr

Received: 21 Mar, 2024 | Accepted: 16 Apr, 2024 | Published: 20 Apr, 2024

**Citation:** Seck S, Camara M, Makhtar Bâ EH, Berkla M, Coundoul A (2024) Factors Associated with Pregnancy-Specific Anxiety: A Study Conducted in Dakar. *J Psychiatry Ment Health* 9(1): dx.doi.org/10.16966/2474-7769.157

**Copyright:** © 2024 Seck S, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

## Abstract

**Introduction:** Pregnancy-Specific Anxiety (PSA) is anxiety that occurs during pregnancy and is characterized by fears and worries about childbirth, the health of the foetus or infant, the health of the mother, the accessibility and quality of health care resources and/or the ability to be a parent. The intensity and timing of these fears vary from woman to woman. A number of factors may contribute to the development of PSA. The general objective of this study was to explore the factors associated with pregnancy-related anxiety in Dakar.

**Material and Methods:** This was a quantitative, cross-sectional, descriptive study with analytical objectives, carried out using a self-administered questionnaire. It was conducted in two health facilities in the Dakar region: the Cheikh Seydi Aboubeker Mbengue improved health post and the maternity ward of the Abbass Ndao hospital. The study ran from 25 February to 30 June 2022.

**Results:** A total of 48 questionnaires were collected from the participants. The prevalence of PSA was 45.83%, with a higher prevalence of "fear of carrying a sick baby" (12.66%). The most common trimesters were the 1<sup>st</sup> and 3<sup>rd</sup>, with prevalence rates of 41% and 31% respectively. The most common age group was 18-24 years (45.83%). The extreme ages were 18 and 39, with a mean of 27(SD of 9.5). Married women represented 91.67% of the sample, with polygamous marriages predominant (84.44%). 58% of the women were employed, but the majority had a low monthly income. Over 56% of our population lived in family accommodation and 37.50% of the women lived independently with their spouses. Most of the women had attended school and had attained higher education (43.75%). 12% of the women had a medical or surgical history of asthma, diabetes, hypothyroidism, gastro-esophageal reflux or caesarean section. 21% had a history of obstetric complications, most commonly miscarriage and hypertensive disorders of pregnancy (4%). Most women had multiple gestations (52%). The majority of women were nulliparous (46%). Pregnancy was desired in 66% of the women.

Our study showed that the factors associated with PSA were: young age ( $p = 0.04$ ); unmarried status ( $p = 0.03$ ); living in a family home ( $p = 0.03$ ); high level of education ( $p = 0.03$ ); no desire to become pregnant ( $p = 0.03$ ); primigravida ( $p = 0.04$ ); nulliparity ( $p = 0.02$ ). Finally, the most predictive factor found was low social support, with a highly significant association ( $p = 0.00001$ ).

**Conclusions:** Our study showed a high prevalence of PSA and identified the factors associated with it. Among these factors, low social support was the most common. Therefore, special attention should be paid to this clinical entity through screening and identification of risk factors.

**Keywords :** Anxiety; Pregnancy; Social support; Dakar

## Introduction

Anxiety and depression are the most common emotional problems experienced by women during the perinatal period. According to the WHO, anxiety affects 14% of pregnant women and is associated with a risk of spontaneous abortion, pre-eclampsia and preterm birth. Pregnancy-Specific Anxiety (PSA) is a clinical entity that is increasingly recognized by perinatal specialists. It is characterized by fears/concerns about childbirth, the health of the foetus or infant,

the health of the mother, the accessibility and quality of healthcare resources and/or the ability to be a parent [1]. The intensity and manifestation of these fears vary from one woman to another, with concerns being more pronounced at certain times during pregnancy. There are many factors that can influence the occurrence of PSA. They can be related to socio-demographic, psychological and contextual aspects. Research into PSA is particularly important because of its potential impact on maternal and foetal well-being. Identifying the

factors associated with PSA makes it possible to define intervention strategies to support women during the perinatal period.

In Senegal, we did not find any studies specifically looking at anxiety in pregnant women. This led us to carry out this study, the general aim of which is to identify the factors associated with PSA.

## Methodology

### Study setting

The study was conducted in the Dakar region in two different facilities:

- The Cheikh Seydi Aboubeker Mbengue improved health post in the Mermoz district;
- The maternity ward of the Abbass Ndao hospital in the Gueule Tapée district.

These two municipal facilities were chosen because of their position in Senegal's health pyramid and their proximity to the population.

### Nature and period of the study

This was a quantitative, cross-sectional, descriptive study with analytical objectives, carried out over a period from 25 February to 30 June 2022.

### Study population

The study focused on pregnant women during the three trimesters of pregnancy.

**Inclusion criteria:** - Pregnant women

- Over 18 years of age,
- Consent to participate
- Ability to read and write French

**Exclusion criteria:** The presence of a personal history of mental disorder was the only exclusion criterion.

### Data collection

The study was conducted using a self-administered questionnaire. It consisted of questions on socio-demographic and obstetric variables, as well as two scales, one to assess PSA (the 'PRAQ-R2') and the other to assess the level of social support (the 'MSPSS'). The validated French versions of the PRAQ-R2 and the MSPSS are used.

The decision to use a questionnaire as the survey instrument was based on the following advantages: it was simple and quick, allowing a relatively large number of people to be surveyed in a short period of time; the participant remained anonymous and at a distance from the interviewer, which allowed them to answer the questionnaire in peace.

Each participant was admitted to a quiet room alone and had approximately 30 minutes to complete the questionnaire.

### Data entry and analysis

The data were statistically analyzed using Epi info software (version 7.2.5.0). The chi-squared test was used to assess the influence and identify the socio-demographic factors associated with pregnancy-specific anxiety, as well as the influence of social support. Statistical tests are considered significant if the P value is less than 0.05, weakly significant if the P value is between 0.05 and 0.1, highly significant if  $p < 0.01$  and extremely significant if  $p < 0.001$ .

### Ethical considerations

Prior to conducting the survey, we obtained authorization from the

head doctor of the Mermoz health post and from the director of the Abass Ndao hospital. We took care to obtain free and informed consent from the participants before they completed the questionnaire. Data were collected anonymously and kept confidential.

## Results

### Descriptive study

We collected a total of 48 questionnaires from the participants in our study who met the inclusion criteria. Of these questionnaires, 42 were collected at the Cheikh Seydi Boubeker Mbengue improved health post, and 6 at the maternity ward of the Abass Ndao hospital. This was a convenience sample.

**Pregnancy-specific anxiety (Table 1):** The prevalence of PSA in our study sample was 45.83%, with participants having a PRAQ-R2 score greater than 26.

Regarding the 3 sub scores of the PRAQ-R2 scale, the highest score concerned "fear of carrying a sick child" with a mean of 12.66 (+/- 4.65). The lowest sub score were 'worries about one's own appearance' with a mean of 6.16 (+/- 2.88).

### Sociodemographic characteristics (Table 2)

**Age:** The age of our study population varied between 18 and 39 years, with an average of 27 years (SD of 9.5). The most represented age group in our sample was '18-24' with a percentage of 45.83%. The least represented group was 'over 35' with a percentage of 8.95%.

**Marital status and regime:** Marital status was mainly characterised by marriage, with a frequency of 91.67%. The marital status of our study population was predominantly polygamous (84.44%).

**Financial Income:** The economic situation of our sample was predominantly low, with 52% having a monthly income of less than US\$ 96.

**Housing:** Over 56% of our population lived in family accommodation. 37.50% lived with their spouse in independent accommodation.

**Nationality:** The majority of participants were of Senegalese nationality (over 87%).

**Ethnicity:** The majority ethnic group in our sample was Wolof (almost 48%), followed by Peulh (25%). Other ethnic groups were in the minority.

**Educational level:** Regarding the educational level of the participants, we distinguished two main levels:

- Higher education with 43.75%.
- Secondary education with 39.58%.

**Table 1:** Prevalence and subscales of PSA.

Variables	Frequency n (%)	Average	ET
<b>Results PSA</b>			
Presence d'ASG	22 (45.83%)	-	-
Absence d'ASG	26 (54.17%)	-	-
<b>Subscales PSA</b>			
Fear of childbirth	-	9.35	3.25
Fear of carrying a sick baby	-	12.66	4.65
Concerns about appearance	-	6.16	2.88

**Table 2:** Socio-demographic profile of the population studied (n = 48).

Variables	N (%)
<b>Socio-demographic Characteristics</b>	
<b>Age group</b>	
18-24	22 (45,83)
25-34	17 (35,42)
≥ 35	9 (18,75)
<b>Marital Status</b>	
Married	44 (91,67)
No married	4 (8,33)
<b>Matrimonial regime</b>	
Polygame	38 (86,36)
Monogame	6 (13,64)
<b>Nationality</b>	
Senegalese	42 (87,50)
Other	6 (12,50)
<b>Education level</b>	
Secondary	19(39,58)
Bac	8 (16,67)
Superior	21 (43,75)
<b>Socio-économique status (Dollar)</b>	
Less than 96	25 (52,08)
[96-160]	10 (20,83)
[160-224]	7 (14,58)
[224-290]	4 (8,33)
More than 29	02 (4,17)
<b>Housing</b>	
Family	27 (56,25)
Self-employed with spouse	18 (37,50)
Alone	3 (6,25)

**Occupation:** In our sample we could distinguish 3 categories: employees, students and housewives. The majority of participants were employed (58%), followed by students (31%).

**Medical history:** - Medical and surgical

In our study population, almost 88% of the women had no medical or surgical history. The remaining 12% had a history of asthma, diabetes, hypothyroidism, gastro esophageal reflux or caesarean section.

- Obstetric

Only 21% of the women studied had a history of obstetric complications, the most common of which was 'miscarriage' (over 15% of all participants), and followed by gestational hypertension (4%).

Most women were multi-gesture (52%). The minority of women were nulliparous (46%).

**Desire for pregnancy:** Over 66% of the women in our study reported that they wanted to become pregnant.

**Gestational age:** In our study, the most common trimesters were the 1st and 3rd trimesters, with a prevalence of 41% and 31% respectively.

**Social support (Table 3):** In our study population, the multidimensional scale of perceived social support showed that 35% of women reported low social support, while 33% reported high perceived social support.

**Table 3:** Statistical description of the MSPPS scale and its subscales.

Variables	Frequency n (%)	Average	ET
<b>Results MSPPS</b>			
Low Perceived social support	17 (35%)	-	-
Medium Perceived social support	15 (31%)	-	-
High Perceived social support	16 (33%)		-
<b>Subscales MSPSS</b>			
Significant Person	-	17.64	8.05
Family	-	18.66	6.25
Friends	-	14.21	7.34

For the MSPSS subscales, the highest mean score was 18.66 (+/- 6.25) for 'family support' and the lowest was 14.21 (+/- 7.34) for 'friends'.

### Analytical study

**Analysis of the relationship between sociodemographic variables and PSA (Table 4):** 63.64% of the participants in our study were under 25 years of age and had PSA. The Odds ratio - 3.93 with a confidence interval between 1.1 and 13.1. Pregnant women under 25 were 4 times more likely to develop PSA than other age groups. The Fisher test was positive (P=0.04), demonstrating a significant association between age and PSA.

For ethnicity, as for nationality, the Fisher test showed that the association of these 2 parameters with PSA was not statistically significant.

Regarding marital status, the results showed that unmarried women were 0.4 times more likely to have PSA than married women. The Fisher test (p=0.03) confirms a significant association in our study. As for marital status, the results show no relationship between it and PSA.

We were unable to find a statistically significant relationship between financial income and PSA.

In terms of living arrangements, the results indicate that the odds of experiencing PSA are twice as high when living with a family member as when living with a spouse. The Fisher test was positive with a value of p < 0.05, showing a significant relationship between the place of residence of the pregnant woman and PSA.

To analyze the parameter of educational level, we divided our sample into two groups: a group representing a higher educational level (Bac/Superior) and a group representing a lower educational level (Secondary). The results show that Fisher's test is positive (p = 0.03), confirming a statistically significant relationship between educational level and PSA. In other words, PSA increases with the level of education.

In our study, the analysis of the occupation parameter in relation to PSA shows that the Fisher test is negative (P = 0.8), confirming that there is no statistically significant relationship between these two parameters.

### Relationship between obstetric variables and PSA (Table 5)

Of the women who wanted to become pregnant, the vast majority (80.77%) did not suffer from PSA. On the other hand, of those who did not want to become pregnant, 50% had PSA. The Fisher test was positive (p = 0.03), indicating a statistically significant association between lack of desire to become pregnant and PSA. In other words, the lack of desire to become pregnant increases the risk of developing PSA.

**Table 4:** Association between socio-demographic factors and PSA.

Sociodemographic variable	Pregnancy-specific anxiety PRAQ R2				
	Present n (%)	Absent n (%)	$\chi^2$	OR [95%CI]	P value
<b>Age group</b>					
18-24	14 (63.64%)	8 (30.77%)	6		0.04**
25-34	4 (18.18%)	13 (50%)			
≥ 35 ans	4(18.18%)	5 (19.23%)			
<b>Nationality</b>					
Senegalese	18 (81.82%)	24 (92.31%)	1	0.37[0.06 – 2.27]	0.39
No Senegalese	4 (18.18%)	2(7.69%)			
<b>Matrimonial status</b>					
Married	18 (81.82%)	26(100%)	3	0.4 [0.28 - 0.58]	0.03**
No married	4 (18.18%)	0(%)			
<b>Matrimonial regime</b>					
Polygamous	16 (88.89%)	22 (84.62%)	0	1.45[0.23 - 8.93]	1
Monogamous	2 (18.18%)	4 (15.38%)			
<b>socio-économique (situation (Dollar)</b>					
Less than 96	12 (54.55%)	13 (50%)	1		0.92
[96-160]	5 (22.55%)	5 (19.32%)			
[160-224]	2 (9.09%)	5 (19.23%)			
[224-290]	2 (9.09%)	2 (7.79%)			
More than à 290	1 (4.55%)	1 (3.85%)			
<b>Housing</b>					
Family	18 (75%)	9 (42.86%)	3	4[1.12 - 14.14]	0.03**
With partner	6 (25%)	12 (57.14%)			
<b>Ethnicity</b>					
Wolof	13 (59.09%)	11 (42.31%)	1		0.4
Peulh	5 (22.73%)	6 (23.08%)			
Other ethnicity	4 (18.18%)	9 (34.62%)			
<b>Occupation</b>					
Employee	12 (54.55%)	16 (61.54%)	0.5		0.83
Student	8 (36.36%)	7 (26.92%)			
Housewife	3 (11.54%)	2 (9.09%)			
<b>Educational level</b>					
Baccalaureate and higher	20 (76.92%)	10 (45.45%)	5	0.25[0.07 - 0.8]	0.03**
Secondary	6 (23.08%)	12 (54.55%)			

In our study, gestational age did not appear to have a statistically significant association with PSA ( $p=0.9$ ).

Regarding gestational age, 63.64% of primigravida in our study had PSA. The odds ratio of 3 indicates that the risk of primigravida is three times higher than that of multigravida. With a p-value of 0.04, the test confirms a statistically significant association between primigravida and SAE. Parity is also a parameter significantly associated with PSA in our analysis, with a p-value of 0.02. The minority of women with PSA were nulliparous, whereas 61.54% of women without PSA were multiparous. In conclusion, both primigravidity and nulliparity increase the risk of developing PSA.

As for the history of obstetric complications and the medical and surgical history, the Fisher test was negative, showing that there was no statistically significant association between these 2 variables and PSA. Abortion, on the other hand, showed little significant association with PSA “ $p = 0.1$ ”

**Relationship between social support and PSA (Tables 6,7):** In our sample, the majority of pregnant women with PSA (up to 68.18% of cases) had low social support. The odds ratio shows that pregnant women with low social support are 3 times more likely to have PSA. The Fisher test with “ $p<0.00001$ ” proves that there is a highly statistically significant association between low social support and the presence of PSA.

After analyzing the comparison table between the means of the different subscales of the MSPSS and those related to PSA, the Student's t-test shows that the most significant association with PSA is that of family support with  $p = 0.00001$ .

## Discussion

### Study limitations and difficulties

Despite the number of pregnant women attending the 2 health establishments, we were faced with a number of difficulties, the

**Table 5:** Association between obstetric factor and PSA.

Pregnancy-related variables	Pregnancy-specific anxiety PRAQ R2				
	Présent n (%)	Absent n (%)	$\chi^2$	OR [95%CI]	P value
<b>Desire to become pregnant</b>					
Desired	11 (50%)	21(80.77%)	3	0.34[0.05 - 1.59]	0.03**
No desired	11 (50%)	5 (19.93%)			
<b>Gestational age</b>					
1st Trimester	6 (27.27%)	9 (34.62%)	<1		0.93
2nd Trimester	6 (27.27%)	7 (26.92%)			
3rd Trimester	10 (45.45%)	10 (38.46%)			
<b>Gravida</b>					
Primigravida	14 (63.64%)	9(34.62%)	3	3.30[1.00 – 10.82]	0.04**
Multigravida	8 (36.36%)	17 (65.38%)			
<b>Purity</b>					
Nulliparous	14 (63.64%)	8 (30.77%)	7		0.02**
Primiparous	3 (13.64%)	2 (7.69%)			
Multiparous	5 (22.73%)	16 (61.54%)			
<b>History of obstetric pathologies</b>					
Présent	7 (31.82%)	4 (15.38%)	1	2.56[0.05 – 1.59]	0.3
Absent	15 (68.18%)	22 (84.62%)			
<b>Abortion</b>					
Yes	7 (31.82%)	3 (11.54%)	1	3.75[0.79 – 16.04]	0.1*
No	15 (68.18%)	23 (88.46%)			
<b>Medical and surgical history</b>					
Yes	3 (13.64%)	3 (11.54%)	<1	1.2[0.2 – 6.7]	1
No	19 (86.36%)	23 (88.26%)			

**Table 6:** Link between PSA and social support.

Social support MSPSS	Pregnancy-specific anxiety PRAQ R2				
	Présent n (%)	Absent n (%)	$\chi^2$	OR [95%CI]	P value
High	4 (18.18%)	12 (46.15%)	19	3.85[1.02-14.58]	0.00001****
Medium	3 (13.64%)	12 (46.15%)			
Low	15 (68.18%)	2 (7.69%)			

**Table 7:** Average of MSPSS subscales related to PSA.

Subscales MSPSS	PSA ( PRAQ R2)		P value
	Average (+/- ET)		
	Present	Absent	
Significant person	13 (+/- 7.70)	21.57 (+/- 6.8)	0.0001 ****
Family	14.95 (+/- 5.94)	21.80 (+/- 4.62)	0.00001 *****
Friends	11.40 (+/- 6.68)	16.76 (+/- 7.07)	0.01 **

main ones being: the need for us to be present to administer the questionnaire, and the language barrier, as most of the women we met had a limited level of French. This reduced the size of our sample. As a result, our results cannot be generalized to the whole population.

### Analysis of the prevalence of PSA

Our study is the first to investigate pregnancy-specific anxiety in women in Senegal. It revealed a significantly high prevalence of PSA, reaching 45.83%. This percentage is close to that observed in a Nigerian study conducted in 2021, which reported a prevalence of PSA

of around 43.5% [2]. This prevalence is higher than that found in other African countries, particularly Tanzania, where a study found that 25% of participants had anxiety specific to pregnancy [1]. It is even higher than in other Gulf countries such as Qatar with a prevalence of 26.6% [3], Saudi Arabia with 23.6% [4] and Kuwait with 15% [5].

The comparison is relevant because these studies used the same instrument to measure the prevalence of PSA. However, the prevalence of pregnancy-related anxiety found in our study is much lower than that reported in India (55.7%). The discrepancy between the reported percentages may be due to the use of a less specific screening tool, the PRT (Pregnancy Related Thoughts) scale in India, which may overestimate the prevalence of anxiety [6]. These variable results may also be explained by the socio-demographic and cultural diversity of the populations studied in each of these countries.

The results of our study confirm that PSA is a significant problem among pregnant women in the West African region, as our results are similar to those from Nigeria. It should be noted that few studies in Africa have looked at PSA. Most of them look at the different types of antenatal anxiety in a general way.

It is important to note that the prevalence of PSA can vary from one region to another and from one country to another, as shown by the difference in prevalence observed between Nigeria and Tanzania, or between India and Qatar. This can be explained by the different socio-demographic and psychosocial factors that influence PSA.

### PRAQ-R2 subscales

Regarding the PRAQ-R2, it should be noted that the most prominent subscale in our study was 'fear of carrying a sick child' with a mean of 12.66 (+/- 4.65). The lowest subscale was associated with 'worries about one's own appearance, with a mean of 6.16 (+/- 2.88). These results are in line with those obtained in a study conducted in Qatar, where physical appearance was also the least important concern (27.34%) [3]. On the other hand, it is interesting to note that the scores for this subscale are higher in European countries [7]. These differences may be explained by cultural differences. In Africa and the Gulf States, weight gain is not generally perceived as a physical defect in women, unlike in European countries. In Mauritania, for example, obesity is seen as synonymous with beauty, which is highly desirable in Moorish society and an important factor in seduction. Sometimes dangerous practices, such as force-feeding, can be used to make women more obese and increase their chances of marriage [8]. It therefore seems necessary to develop scales adapted to each culture in order to better understand the issue of PSA.

On the other hand, anxiety or fear of childbirth is the subscale most represented in the different studies we were able to consult, particularly in the Iranian study (n = 32, 6.1%). This population was found to have a high demand for caesarean sections [7,9].

### Factors associated with PSA

**Socio-demographic and obstetric factors:** Our study has shown that the factors predictive of PSA in pregnant women in Senegal, with a statistically significant association, are: Young age (p=0.04); Marital status "unmarried" (p=0.03); Living in a family home (p=0.03); High level of education (p=0.03); No desire to become pregnant (p=0.03); Primigravida (p=0.04); Nulliparity (p=0.02), as for abortion, the association was not statistically significant (p=0.1). Finally, the most predictive factor found was "degree of social support", with a highly significant association (p=0.00001); low social support predicts a high prevalence of PSA.

When compared with a study conducted in Niger in 2021, similarities were observed in certain socio-demographic factors that were significantly associated with PSA. These included 'maternal age' (p = 0.004), 'educational level' (p = 0.011) and 'type of housing' (p = 0.029), as well as certain obstetric factors such as 'desire to become pregnant' and 'previous abortion'. However, this study also identified other socio-demographic factors, particularly 'ethnic origin' (p = 0.001) and 'lifestyle' (p = 0.029), whose association with PSA was not confirmed in our study. In addition, the Nigerian study identified other obstetric factors associated with PSA, notably "gestational age" (p = 0.01), which shows a high degree of PSA in pregnant women in the second trimester, and "obstetric complications" such as gestational hypertension (p = 0.006) [2]. In contrast, other studies, including one from India, have reported higher rates of PSA in pregnant women in the third trimester [7,10].

Interestingly, the obstetric factors associated with PSA in our study are consistent with the findings of other studies, including a Qatari study and an Indian study conducted in 2015. The Qatari study concluded that 'pregnancy desire' and 'previous abortion' were associated with a high risk of PSA [3]. Similarly, the results of the Indian study showed

that nulliparous and primiparous women were more likely to develop PSA, and that 'maternal age' was also a predictive factor for PSA [10], conclusions supported by data in the literature [7].

These findings may be explained by the fact that younger women, especially those who are pregnant for the first time, have never experienced pregnancy or childbirth before. This newness may lead to anxiety and uncertainty, contributing to PSA. In addition, 'wanting to get pregnant' and a history of 'previous abortion' may also be factors associated with specific concerns about maternal and foetal health.

It is important to emphasize that the results of our study are not the same as those of the Tanzanian study. Contrary to the results of the majority of studies found in the literature [7], the Tanzanian study did not identify any factors predictive of PSA, with the exception of "active depression" [1].

A possible reason for these different results could be the inclusion criteria used in these studies. Indeed, it seems that some of these studies included women with active mental disorders, which may have had a significant impact on the results. On the one hand, this may represent a study bias, as women with mental disorders may naturally have higher levels of anxiety. On the other hand, this inclusion made it possible to identify other factors associated with PSA, such as 'major depressive episode', a factor that has been confirmed in several other studies in the literature [7].

These variations in results highlight the importance of taking into account the diversity of populations studied and cultural contexts, as well as different research methodologies. They highlight the complexity of PSA and the need to consider the many factors that may influence this anxiety throughout pregnancy.

Identifying factors that predict PSA is important because of its implications for maternal and foetal health. Such identification will allow the implementation of preventive measures aimed at reducing maternal-foetal complications such as prematurity, low birth weight and caesarean section, as documented in several European studies conducted in Amsterdam, Spain, Germany and Switzerland [11-13].

**Social support:** Overall, we found that most of the reviewed studies showed a significant association between pregnancy-related anxiety and level of social support, highlighting the importance of perceived social support in coping with PSA. This was confirmed in our study (p=0.00001). However, it is noteworthy that the Tanzanian study found no association between social support and PSA [1], again highlighting the variability of results according to cultural and geographical context.

These studies concluded that low levels of perceived social support were inversely associated with PSA, meaning that pregnant women with adequate social support tend to have lower levels of pregnancy-related anxiety. Perceived social support may play a protective role, mitigating the effects of PSA and helping women to cope with the challenges of pregnancy. This highlights the importance of considering social support in the management of SGA and implementing interventions to increase this support for pregnant women [7,14].

Our study also highlighted the importance of family support. In fact, our results showed that the highest mean score found for the MSPSS subscales was for "Family" at 18.66 (+/- 6.25) with a P value of 0.00001. This shows that there is a statistically highly significant link between family support and PSA among pregnant women in Senegal, compared with the other MSPSS subscales, in particular friendly support and support from a significant person. Many studies have shown a more significant association between partner support and PSA, as in the Nigerian study, which concluded that increasing

the social support perceived by the partner seems to reduce the risk of anxiety specific to pregnancy [2]. Another study carried out in Iran, the aim of which was to determine the relationship between fear of childbirth in PSA and social support, also confirmed the highly significant association between social support, particularly from the partner, and fear of childbirth in pregnant women [9]. Our results show the important place of the family in Senegalese society. Even if they are married, women maintain special ties with their families, who are present during special events such as pregnancy or childbirth.

Other studies, such as those from Qatar and China, suggest that there are other parameters that condition social support in pregnant women, such as resilience and family functioning. Greater perceived social support and better family functioning contribute to greater resilience, generate positive emotions and attenuate PSA [15].

## Conclusion

Our study investigated the factors associated with PSA. The results show a significant prevalence of PSA. Among the factors examined, young age, unmarried marital status, living in a family home, high level of education, lack of desire to become pregnant, primiparity and nulliparity emerged as factors associated with a greater prevalence of PSA. The most predictive factor was low social support, highlighting the importance of the social and family network in coping with anxiety during pregnancy. Interventions aimed at strengthening social support could therefore play an important role in the management of PSA.

These findings suggest the need to raise awareness of this clinical entity among different perinatal health professionals in order to identify pregnant women with risk factors. Early detection strategies and targeted intervention programmers could help reduce the negative impact of PSA on maternal mental health and fetal well-being.

## References

1. Wall V, Sadrudin Premji S, Letourneau N, McCaffrey G, Charles Nyanza E (2018) Factors associated with pregnancy-related anxiety in Tanzanian women: a cross sectional study. *BMJ Open* 8: e020056.
2. Akinsulore A, Temidayo AM, Oloniniyi IO, Olalekan BO, Yetunde OB (2021) Pregnancy-related anxiety symptoms and associated factors amongst pregnant women attending a tertiary hospital in south-west Nigeria. *S Afr J Psychiatr* 27: 1616.
3. Naja S, Al Kubaisi N, Singh R, Bougmiza I (2020) Generalized and pregnancy-related anxiety prevalence and predictors among pregnant women attending primary health care in Qatar, 2018-2019. *Heliyon* 6: e05264.
4. Alqahtani AH, Al Khedair K, Al-Jeheiman R, Al-Turki HA, Al Qahtani NH (2018) Anxiety and depression during pregnancy in women attending clinics in a University Hospital in Eastern province of Saudi Arabia: prevalence and associated factors. *Int J Womens Health* 10:101-108.
5. Pampaka D, Papatheodorou SI, AlSeaidan M, Al Wotayan R, Wright RJ, et al. (2018) Depressive symptoms and comorbid problems in pregnancy - results from a population based study. *J Psychosom Res* 112: 53-58.
6. Nath A, Venkatesh S, Balan S, Metgud CS, Krishna M, et al. (2019) The prevalence and determinants of pregnancy-related anxiety amongst pregnant women at less than 24 weeks of pregnancy in Bangalore, Southern India. *Int J Womens Health* 11: 241-248.
7. Reeves N (2017) Pregnancy-Specific Anxiety: A distinct clinical entity? Prospective and longitudinal comparative study of its progression, intensity, risk factors, associated correlates and effects on post-natal maternal mood. Doctoral thesis in psychology. Sorbonne University Paris City: 242.
8. Puigaudeau O (2005) Moorish art and customs. Paris: Ibis press: 320.
9. Mortazavi F, Agah J (2018) Childbirth Fear and Associated Factors in a Sample of Pregnant Iranian Women. *Oman Med J* 33: 497-505.
10. Madhavanprabhakaran GK, D'Souza MS, Subrahmanya Nairy K (2015) Prevalence of pregnancy anxiety and associated factors. *I J Africa Nursing Sci* 3: 1-7.
11. Loomans EM, van Dijk AE, Vrijkotte TGM, van Eijsden M, Stronks K, et al. (2013) Psychosocial stress during pregnancy is related to adverse birth outcomes: results from a large multi-ethnic community-based birth cohort. *Eur J Public Health* 23: 485-491.
12. Hernández-Martínez C, Val VA, Murphy M, Busquets PC, Sans JC (2011) Relation between positive and negative maternal emotional states and obstetrical outcomes. *Women Health* 51:124-135.
13. Rauchfuss M, Maier B (2011) Biopsychosocial predictors of preterm delivery. *J Perinat Med* 39: 515-521.
14. van Heyningen T, Honikman S, Myer L, Onah MN, Field S, et al. (2017) Prevalence and predictors of anxiety disorders amongst low-income pregnant women in urban South Africa: a cross-sectional study. *Arch Womens Ment Health* 20: 765-775.
15. Huang J, Xu L, Xu Z, Luo Y, Liao B, et al. (2022) The relationship among pregnancy-related anxiety, perceived social support, family function and resilience in Chinese pregnant women: a structural equation modeling analysis.