

Impact of perceived social support on prenatal outcome among pregnant women

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Abstract

Nigeria's mortality ranks 14th in the world. Prenatal outcomes such as preterm birth, birth weight and Apgar score are some of the leading causes of prenatal morbidity and mortality worldwide, particularly in sub-Saharan Africa. It is against this backdrop that this study examined the impact of social support on birth outcomes among pregnant women in Eku Baptist Hospital, Delta State. The study was anchored on survey and observational research designs. Primary and secondary data sources were used. The study population was pregnant women in labour. A census of 161 pregnant women who registered at the health facility was taken. Descriptive and inferential statistical tools were used in the study. The study revealed that 23.5% of women with low perceived social support delivered babies with a low birth weight compared to only 5.5% of women who had strong perceived social support. This difference was statistically significant with a p-value of 0.003. Again, 88.2% compared to 72.5% had normal birth weight babies for women with strong social support and weak social support respectively and the differences in birth weight were statistically significant with $P=0.003$. Also, 15.7% of women with poor social support had preterm babies compared to 10.9% of women with strong social support. The proportion of babies with neonatal Apgar scores less than 7 born to women who had weak/poor perceived social support (31.4%) was higher than that in women who had strong perceived social support (13.6%) and the relationship was statistically significant with $p\text{-value}=0.008$. The result of the study showed a statistically significant association between perceived social support and neonatal Apgar scores. The regression coefficient R of 0.166 however, shows a low predictive power. Based on the findings of the study, it is suggested that pregnant women should be given emotional, instrumental, informational and appraisal support to achieve better prenatal outcomes.

Keywords: Perceived Social Support; Preterm birth; Birth weight; Apgar score; Pregnancy

1. Introduction

Pregnancy is generally a vulnerable and stressful period for women and the presence of social support cannot be over-emphasized (Gurung, 2006). Social support from family, friends, and well-wishers has a buffering effect on this stressful event (Holt-Lunstad, Smith & Layton, 2010). Social support is the social resources provided by a network of friends, acquaintances, and family members that persons perceive to be available or that are actually available to women during pregnancy, delivery, and postpartum. The achievement of the prenatal outcome depends on the interaction of several factors, key among them is social support (Berkman, Glass, Brissette & Seaman, 2000). Social support has also been described as interpersonal ties to a specific group that provides emotional assistance in times of need. This group of support usually includes such entities as family, friends, and colleagues (MC. Dowell, 2006). Social support has two dimensions: the perceived and the received or actual. The received social support refers to naturally occurring helping

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behaviours that are available and being provided during times of need. Succinctly put, it is the supportive actions provided like advice, and reassurance offered during times of need to a person. Conversely, perceived support refers to the belief that helping behaviour could be provided when needed (Kitamura, et al, 2002). It is also seen as the recipient's subjective judgment that providers will offer (or have offered) effective help during times of need, particularly during health issues (Haber, Cohen, Lucas & Bates, 2007). The perceived social support was assessed in this study since it is closely related to health.

Social support could also be categorized into four broad types of supportive behavior (Heaney & Israel, 2002). They are emotional support, instrumental support, and informational and appraisal support. All these categories of social support mean the offering of empathy, concern, affection, love, trust, acceptance, intimacy, encouragement, or caring. They are also the warmth and nurturance provided by sources of social support. Providing emotional support can let the individual know that he or she is valued. It is also when empathy, love, trust and care are provided to an individual, especially in times of need (Croezen, et al., 2012). This could be in the form of prayer, a feeling of being cared for, and of increased self-worth. Social support is often understood by analyzing perceptions and receipt of support. The form of support bolsters an individual's self-esteem or beliefs in their ability to handle problems or perform needed tasks. Social support is the provision of financial assistance, material goods, or services. Social support encompasses the concrete, direct ways people assist others. It also involves the provision of tangible and intangible assistance that directly help a person in need. Such tangible assistance includes the provision of financial means that helps the pregnant woman to seek health care and also to provide for medical bills. Assessing health care can be a challenge in rural areas as a result of poor road conditions, and poor transportation systems, especially during the rainy season. This form of support is the easiest to recognize as it involves the provision of goods and services. Intangible assistance relates to the provision of advice, guidance, suggestions, or useful information to someone. This type of information has the potential to help others to solve a problem (Dejin-Karlsson, et al., 2000).

Pregnancy and childbirth involve risks for pregnant women and their babies. Good health in the perinatal period remains an important health priority (World Health Organization (WHO), 1992). Studies have suggested that lack of, or poor social support during pregnancy may lead to Low Birth Weight (LBW) in babies (Hanson, et al, 2000; Elsenbruch, et al, 2007). In another prospective cohort study in Sweden by Dejin-Karlsson, et al., (2000), it was found that women with a low degree of participation in society and those lacking instrumental support (access to advice and information) shared the greatest risk of giving birth to small for gestational age babies, they concluded that lack of psychosocial resources, such as social stability, social participation, emotional and instrumental support, all increased the likelihood of delivering an infant that was small for gestational age. Several other studies on health have shown that social support has good advantages (Hobel, Goldstein & Barrett, 2008; Dejin-Karlsson, et al., 2000). Social support is considered a key component of behavioural weight-loss programs, and it has been shown to help in weight-loss interventions and in weight-loss maintenance (Verheijden, et al, 2005). Nevertheless, Kiernan et al (2012) reported that 45.7% of women who "never" experienced family support were least likely to lose weight whereas 71.6% of women who experienced both frequent friend and family support were more likely to lose weight (Kiernan, et al, 2012). It is important to add that the studies relied on self-report to determine support received, this may however be affected by emotions at the time of data collection.

Morhason-Bello, Adedokun & Ojengbede, (2009) in Ibadan reported that social support decreased the rate of caesarean section and the duration of labour. In a randomized control trial in Nigeria, it was shown that social support helped reduce the time from birth to initiation of breastfeeding amongst first time mothers (Morhason-Bello, Adedokun & Ojengbede, 2009). The study also revealed that women who had a companion of their choice in the delivery room had all initiated breastfeeding within 26 minutes of giving birth while none of the control group had done likewise 30 minutes of giving birth with some not initiating breastfeeding even after 12 hours of giving birth. Furthermore, a Cochrane review of randomized controlled trials reported that women who had continuous support during childbirth were more likely to have a spontaneous vaginal birth and less likely to have intra-partum analgesia (Hodnett, Gates, Hofmeyr, Sakala and Weston, 2011). In addition, their labours were shorter and they were less likely to have a caesarean section or instrumental vaginal birth, regional analgesia or a baby with a low neonatal Apgar score (Hodnett, et al, 2011). The study contended that within countries, social factors such as maternal education and occupation, household income and marital status, as well as community-level characteristics, are major determinants of perinatal health while deprivation, poverty, unemployment and segregation are associated with risk of fetal neonatal and infant death, preterm birth, LBW, Low Apgar score and some congenital anomalies (Centre for Disease Control and Prevention (CDCP), 2003).

Alluding to previous scholars that found a relationship between social support and prenatal outcomes (Ajiboye & Adebayo, 2012) maintained that the culture of the people, the environment where they live and the socio-economic status of pregnant women have been associated with pregnancy outcomes. The scholars noted that in some

communities, women’s socio-economic status is significantly low and that prevents them from contributing meaningfully to family discourse. The men are bestowed with the responsibility of taking a decision on behalf of the family and this make the men take a sole decision that affects members of their families. The implication of this is that some activities that influence pregnancy outcomes are sometimes taken for granted resulting in adverse pregnancy outcomes. (Ajiboye & Adebayo, 2012) further stressed that in some cultures, traditional feast and burial rites prohibit or prevent everyone including pregnant women from going out of their homes for some days. According to the researchers, such practice has led to serious morbidity and mortality for many pregnant women whose delivery period fell into that time.

The general consensus in the literature is that perinatal outcome is affected by perceived social functioning. However, from the literature reviewed, there is an apparent dearth of empirical data on the impact of perceived social support on prenatal outcomes. Studies on the subject do not clearly show the contribution of the explanatory variable on birth weight and APGAR score, therefore, becomes difficult to explain the extent to which perceived social support impacts prenatal outcomes is important to remark that studies in the direction of this study have not been carried out in Delta State. The majority of the literature assessing social support and pregnancy outcomes are foreign. (Da Costa, Drita, Larouche & Brender, 2000; Nkansah-Amankra, Dhawain, Hussey & Luchok, 2010). Premised on the gap in the literature, this study seeks to examine the impact of perceived social support on prenatal outcomes among pregnant women in Eku, Delta State Nigeria.

Eku is located at latitude 5°44'38.2"N (5.7439400°) and longitude 5°59'25.8"E (5.9904900°) and lies on the western part of the river Ethiope as shown in figure 1. It is a town in Ethiope East Local Government of Delta state. It is located between Warri-Abraka road with a four-road junction at the centre of the town. The occupation of the people of the community is basically farming and fishing. However, there is a weekly market where they engage in informal trading.

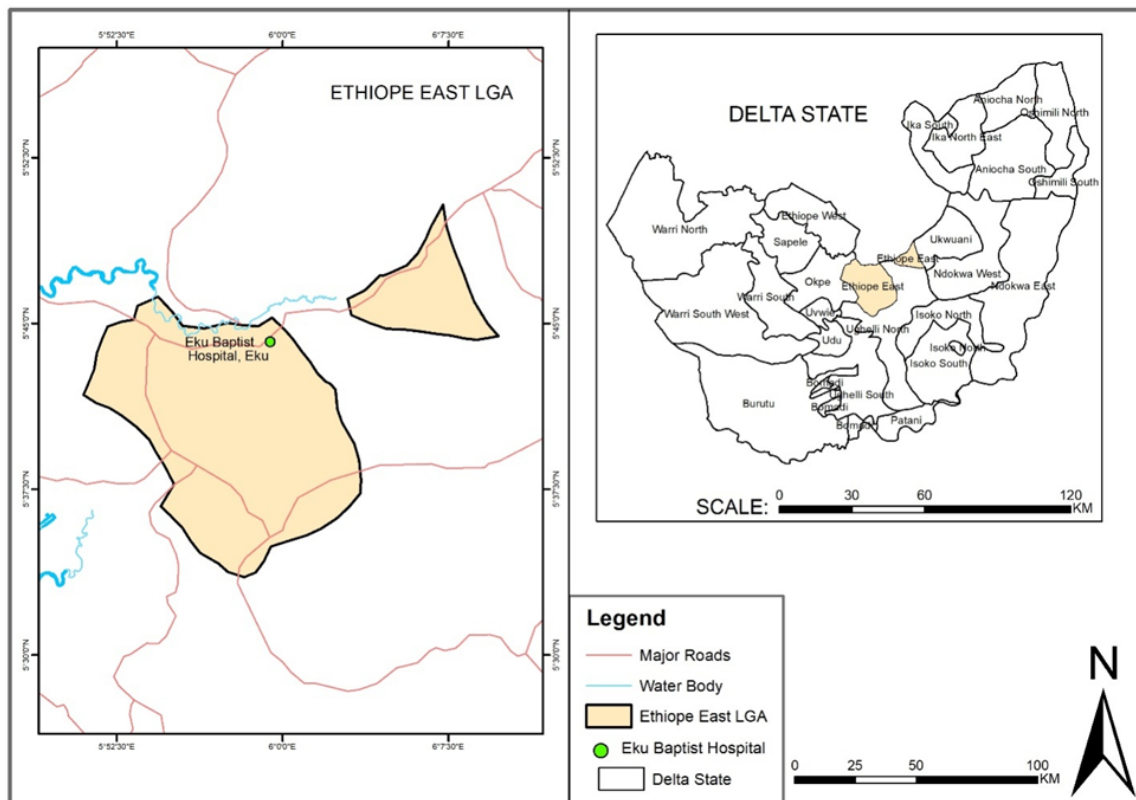


Figure 1 Map of the study Area (Eku)

2. Material and methods

This study adopted the cross-sectional research design as well as the participant observation method. The data for this study emanated from both primary and secondary sources. Secondary data were clearly obtained from textbooks, journals, internet sources and relevant health institutions including Eku Baptist Hospital among others. The primary source of data for this study was obtained through the use of a well-structured questionnaire using the perceived social

support family scale. The scale is a 20-item measure of family quality and it is widely used as a measure of family and social support. It has a score range of 0 -20. Higher scores indicated higher levels of perceived family support. Scores equal to or greater than 11 points suggested strong family support. Scores from 7 to 10 points suggested weak family support while scores equal to or less than 6 points suggested poor or absent family support. Perceived social support was grouped into two for the purpose of this study. Strong social support with a score of ≥ 11 and weak/absent social support with a score of ≤ 10 .

The study population consisted of pregnant women who registered and delivered at the Eku Baptist Hospital, Delta state. During the period of the study, 243 pregnant women registered in the antenatal unit of the hospital but only 186 of them delivered babies in the hospital. The researchers chose to do a census because of the small size of participants. Therefore, the sample size for the study was 186 pregnant women though only 161 of them responded correctly to the questionnaire. Hence the analysis was based on 161 copies of the questionnaire retrieved.

The data gotten from the field were analyzed using simple percentages, Chi-square and Fisher's exact test where appropriate, Analysis of Variance (ANOVA) and linear regression. Simple percentages provided meaningful discussion and analytical descriptions of the social economic characteristics of the respondents in the study. Raw scores collected from the field were presented in frequency distribution tables and then interpreted into simple percentages [%], which is defined as a part of a whole expressed in hundredths. It is expressed as:

$$\frac{F}{N} \times \frac{100}{1} \dots\dots\dots(\text{Equation 1})$$

Where:

F =frequency (number of times of each response)

N= size (161)

Chi-square (χ^2) is a non-parametric statistical tool that measures the difference between the observed and expected frequencies of the outcomes of a set of events or variables. It is used in this study to establish the association between the variables prenatal outcome and social support. Symbolically it is:

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i} \dots\dots\dots\text{equation (2)}$$

Where:

χ^2 =chi square

O_i = observed value

E_i = expected value

Fisher's exact test is a statistical significance test used in the analysis of contingency tables to determine the association between variables that are independent of each other. It is also employed when sample sizes are small as with this study. This study used this analytical technique to explain the value of each variable used in the study and the difference from the other nominal variables. It is expressed in the form:

$$p = \frac{(a + b)!(c + d)!(a + c)!(b + d)!}{a!b!c!d!n!} \dots\dots\dots\text{equation (3)}$$

Where:

P= probability value

A, b, c, d = values in a contingency table

n = total frequency

In order to remove confounding factors and interactions that could have affected the result, the significant variables such as age at delivery, birth weight and neonatal Apgar score were subjected to regression and the results were presented in graphical forms and tables. The simple linear regression was used to determine the impact of the independent variable (PSS) on the dependent variables (age at delivery, birth weight and neonatal APGAR score). A linear regression line has an equation of the form:

$$Y = a + bX, \dots\dots \text{equation (4)}$$

Where:

X is the explanatory (age at delivery) variable

Y is the dependent variable (perceived social support).

The slope of the line is b, and a is the intercept (the value of y when x = 0).

The data were processed in the Statistical Package for Social Science (SPSS version 20.0) for faster and accurate result.

3. Results and discussion

On perceived social support and birth weight, this study revealed that 23.5% of women with low perceived social support delivered babies with a low birth weight compared to only 5.5% of women who had strong perceived social support. This implies that the proportion of low-birth-weight babies by women with poor social support was four times that of women who had strong perceived social support. Likewise, 88.2% compared to 72.5% had normal birth weight babies for women with strong social support and weak social support respectively. These differences in birth weight were statistically significant with $P = 0.003$. (See Table 1). It is also revealed by this study that 15.7% of women with poor social support had preterm babies compared to 10.9% of women with strong social support. This relationship was however not statistically significant with $p = 0.393$. The proportion of babies with neonatal Apgar scores less than 7 born to women who had weak/poor perceived social support (31.4%) was higher than that in women who had strong perceived social support (13.6%). This relationship was statistically significant ($p = 0.008$). In order to remove confounding factors and interactions that could have affected the result, the significant variables were subjected to logistic regression as shown in table 5. This result is similar to the findings of studies conducted in Quebec, Canada and South Carolina USA respectively (Da Costa, Dritsa, Larouche & Brender, 2000); Nkansah-Amankra, Dhawain, Hussey&Luchok, (2010).The studies reported that some of the variability in birth weight was due to the presence of maternal social support. However, the result of the current study differs from Hodnett, et al. (2011) that found that providing extra social support to women at risk of having LBW babies did not reduce the incidence of LBW. This implies that the relationship between maternal social support and birth weight varies from society to society.

Table 1 Association Between Maternal Perceived Social Support and Perinatal Outcome

Perinatal Outcome	PSS		Statistics
	Strong Social Support	Weak/Poor Social Support	
Age At Delivery			df = 1 $\chi^2 = 0.731$ $p = 0.393$
<37(Preterm)	12 (10.90%)	8(15.70%)	
37-42(Term)	98 (89.10%)	43(84.30%)	
Total	110 (100.00%)	51(100.00%)	
Birth weight			df = 2 fisher = 11.577 $p = .003^{**}$
<2.5	6(5.5%)	12 (23.5%)	
2.5 – 3.9	97(88.2%)	37(72.5%)	
≥ 4.0	7(6.4%)	2(3.9%)	
Total	110(100.0%)	51(100.0%)	
Neonatal Apgar score			df = 1 $\chi^2 = 7.050$ $p = .008^*$
Normal neonatal Apgar score	95(86.4%)	35(68.6%)	
Low Apgar score	15(13.6%)	16(31.4%)	
Total	110(100.0%)	51(100.0%)	

Source: Researchers' fieldwork, 2021

Another finding of the study is to the effect that there is no statistically significant association between the gestational age at birth of women who had strong perceived social support and those with poor or weak social support ($p = 0.393$). This differs from the findings of a descriptive study carried out in Iran by Mahrokh et al (2013) who found that preterm delivery was significantly associated with psychosocial factors. It also differs from the findings of Roy-mattonet al (2011) who found that maternally perceived stress and inadequate social support before 20 weeks gestation was

associated with complications of pregnancy and especially with preterm birth. This study did not show a statistically significant relationship between social support and preterm birth probably because of the timing of assessing the level of social support. Social support was assessed when the development of the foetus is almost complete. On perceived social support and neonatal APGAR score of the study showed that there is a statistically significant association between perceived social support and neonatal Apgar scores with $p=0.005$ as depicted in table 1. This finding is in tandem with Murphy (2008) who remarked that women who readily receive tangible and intangible assistance from family members and friends have high chances of having high neonatal APGAR score. Nevertheless, the regression coefficient R of 0.166 shows a low predictive power.

The study also showed that the majority of the participants 133 (82.6%) with a 95% confidence interval of 77-89 as shown in table 2 indicated high levels of satisfaction with their perceived family function. Only twenty-eight participants (17.4%) with a 95% confidence interval of 11-23, perceived their family as dysfunctional using the Family APGAR. Functional family shows a confidence interval of 77 to 89 while dysfunctional ones show 11 to 23 at 95% confidence interval (CI). This implies that the study is 95% confident that response on the dysfunctional family will fall within the range of 11 to 23.

Table 2 Perceived Family Function Using the Family APGAR

Family Apgar	Frequency	Percentage (%)	95% CI
Dysfunctional	28	17.4	11 to 23
Functional family	133	82.6	77 to 89
Total	161	100.0	

Source: Researchers' fieldwork, 2021

Albeit, using the perceived social support- family scale as depicted in table 3, almost two thirds that is 110 (68.3%) of study population with a 95% CI of 61-76 had high levels of perceived social support, while 31.7% (51) with a 95% CI of 24 to 39 indicated low levels of perceived social support.

Table 3 Respondents' Perceived Social Support

Perceived Social Support (PSS)	Frequency	Percentage (%)	95% CI
Strong Social Support	110	68.3	61 to 76
Weak/Poor Social Support	51	31.7	24 to 39
Absent Social Support	0	0	1 to 2
Total	161	100.0	

Source: Researchers' fieldwork, 2021.

Another important finding of this research is that there is no statistically significant relationship between the socio-demographic variables of the participants and their perceived social support demonstrated in table 4. Chi square statistics for association is not statistically significant because p-value higher than 0.05 level of significance.

Importantly, the research output as typified in table 5, indicated that 0.048 independent variables perceived social support (PSS) explain 4.8% of the variability of dependent variable (Birth weight). This implies that there could be other variables contributing to the birth weight of neonates other than perceived social support. As found in table 5, the column represents the value of R_1 , the correlation coefficient. R can be considered to be one measure of the quality of the prediction of the dependent variable (Birth weight). In this case, the R of .219 indicates a low prediction of confounding factors. The R Square column represents the R^2 value (also called the coefficient of determination), is the proportion of variable in the dependent variable that can be explained by the independent variable. Technically, it is the proportion of variation accounted for by the regression model above and beyond the mean model. Based on the research output presented in table 5, PSS explains the variability of birth weight by 4.8%. The implication is that there could be other variables contributing to the birth weight of the baby other than PSS.

Table 4 Association between Socio-Demographic Characteristics of Respondents and Perceived Social Support

Socio-Demographic Characteristics of Respondents	PSS		Statistics
	Strong Support	Weak/Poor Support	
Age Group			
15-24	32(29.1%)	15(29.4%)	df = 2 X ² = 0.507 p = 0.776
25-34	65(59.1%)	28(54.9%)	
35-44	13(11.8%)	8(15.7%)	
Total	110(100.0%)	51(100.0%)	
Marital Status			
Single/Never Married	20(18.2%)	9(17.6%)	df = 3 Fisher = 2.458 p = 0.483*
Married/Cohabiting	83(75.5%)	37(72.5%)	
Divorced/separated	3(2.7%)	4(7.8%)	
Widowed	4(3.6%)	1(2.0%)	
Total	110(100.0%)	51(100.0%)	
Religion			
Christianity	84(76.4%)	43(84.3%)	df = 3 Fisher = 5.921 p = 0.115*
Islam	5(4.5%)	5(9.8%)	
ATR	13(11.8%)	2(3.9%)	
Others	8(7.3%)	1(2.0%)	
Total	110(100.0%)	51(100.0%)	
Level of Education			
Primary	24(21.8%)	11(21.6%)	df = 3 X ² = 2.684 p = 0.443
Post-Primary	34(30.9%)	21(41.2%)	
Tertiary	32(29.1%)	14(27.5%)	
No Formal	20(18.2%)	5(9.8%)	
Total	110(100.0%)	51(100.0%)	
Occupation			
Artisans/Farming	48(43.6%)	18(35.3%)	df = 2 X ² = 1.368 p = 0.505
Trader	34(30.9%)	16(31.4%)	
Civil-Servants	28(25.5%)	17(33.3%)	
Total	110(100.0%)	51(100.0%)	
Living Style			
Live Alone	13(11.8%)	9(17.6%)	df = 1 X ² = 1.004 p = 0.316
Not Alone	97(88.2%)	42(82.4%)	
Total	110(100.0%)	51(100.0%)	
Income			
<20,000	26(23.6%)	17(33.3%)	df = 2

20,000 - 100,000	72(65.5%)	29(56.9%)	X ² = 1.677 p = 0.170
>100,000	12(10.9%)	5(9.8%)	
Total	110(100.0%)	51(100.0%)	

Source: Researchers' fieldwork, 2021; *Fisher's exact test was done for counts less than 5 and they were not significant in the above association of demographic variable with PSS.

Table 5 Regression Model for Perceived Social Support (PSS) and Birth Weight

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.219 ^a	.0048	0.042	0.39829

a. Predictors: (Constant), Perceived Social Support (PSS)

The F-ratio presented in Table 6 tests whether the overall regression model is a good fit for the data. It is shown that the independent variable is statistically significant and thus does predict the dependent variable, $F(1, 159) = 1.274, p = 0.005$. Hence the regression model is a good fit of the data. From the above, a multiple regression was run to predict Birth Weight from PSS. The variable was statistically significant and as such did predict Birth Weight, $F(1, 159) = 1.274, p = 0.005$. given $p < 0.05$ level of significance. This could further be explained in the regression graph in figure 2.

Table 6 First Analysis of Variance for Perceived Social Support

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.274	1	1.274	8.029	0.005 ^b
	Residual	25.223	159	0.159		
	Total	26.497	160			

a. Dependent Variable: Birth weight; b. Predictors: (Constant), Perceived Social Support

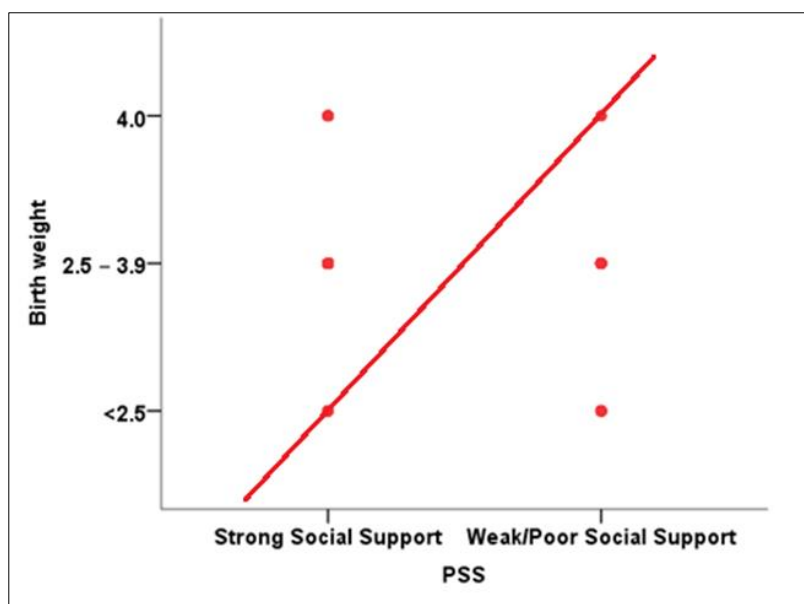


Figure 2 Regression Graph for Perceived Social Support and Birth Weight

The graph shows that the higher the perceived social support the higher the birth weight

Table 7 Regression Model for Perceived Social Support (PSS) and Neonatal APGAR Score

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.166 ^a	0.028	0.021	1.50534

a. Predictors: (Constant), Perceived Social Support

As demonstrated in table 7, the study found that 0.028 independent variables (PSS) explain 2.8% of the variability of the dependent variable (neonatal Apgar score). Thus, suggesting that other variables may contribute to neonatal APGAR score. The R column as depicted in table 7 represents the value of R_1 , the correlation coefficient. R can be considered to be one measure of the quality of the prediction of the dependent variable. In this neonatal Apgar score, the R of .166 indicates a low prediction of confounding factors. The study findings as shown in Table 7 indicates that 0.028 of the independent variables (PSS) explain 2.8% of the variability of the dependent variable (neonatal Apgar score).

Finally, the F-ratio in the ANOVA table 8 tests whether the overall regression model is a good fit for the data. Table 8 shows that the independent variables are statistically significant and thus do predict the dependent variable, $F(1, 159) = 2.266, p = 0.005$. Hence the regression model is a good fit for the data. From the above, a multiple regression was run to predict neonatal Apgar score with PSS. The variable was statistically significant and as such did predict neonatal Apgar score, $F(1, 159) = 2.266, p = 0.035$ given $p < 0.05$ level of significance. The graph shows that the higher the perceived social support the higher the neonatal Apgar score.

Table 8 Second Analysis of Variance for Perceived Social Support

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	10.218	1	10.218	4.509	0.035 ^b
	Residual	360.304	159	2.266		
	Total	370.522	160			

a. Dependent Variable: Neonatal Apgar score; b. Predictors: (Constant), Perceived_Social_Support

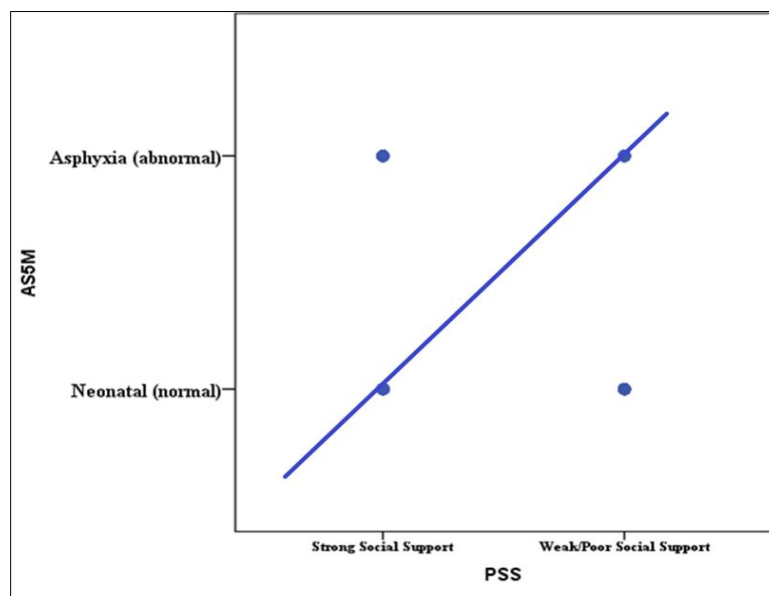


Figure 3 Regression Graph for Perceived Social Support and Neonatal APGAR Score

The graph shows that the higher the perceived social support the higher the neonatal Apgar score.

4. Conclusion

Women are usually plagued with some kind of stress during pregnancy, particularly during labour. The need for perceived social support for them cannot, therefore, be overemphasized. This study has established that there is a significant impact of perceived social support on the birth weight of the child although two factors account for 4.8% variability in birth weight. Furthermore, there is a significant impact of pss on the neonatal APGAR score however, perceived social support contributes 2.8 % variability in the APGAR score. It was found that respondents with strong social support and those with highly functional families had good prenatal outcomes such as birth weight and APGAR score. The study concluded that respondents with weak or absent social support and those from dysfunctional families had poor prenatal outcomes. It is, therefore, suggested that pregnant women should be given emotional, instrumental, informational, and appraisal support to achieve better prenatal outcomes such as APGAR score and birth weight.

Compliance with ethical standards

Disclosure of conflict of interest

There is no conflict of interest to declare.

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