



Strategic care for low back pain using start-back screening tool stratification among pregnant women

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Abstract

Objectives: To assess the use of stratified care with StartBack in managing pregnancy-related Low Back Pain. And to determine the effect of stratified care on pain intensity, disability level, and health-related quality of life of pregnant women at each trimester.

Method: A total number of 57 participants were purposively recruited for an experimental study from a Primary Health Centre in Nigeria and were stratified into three risk groups following start-back screening tools. Ethical approval was obtained from the Ethics and Research Committee. Informed consent and permission to conduct research were secured before the commencement of research. A visual Analogue Scale was used to assess the level of pain intensity after which the Start-Back screening tool was administered for risk stratification. The low-risk group received education on ergonomics and self-care, the medium-risk group received lumbar stabilization exercise, and the high risk received both education and lumbar stabilization exercise. Also, the Oswestry disability questionnaire and quality of life questionnaire were assessed. Data were collected at baseline, 4th week, and 8th week.

Results: The result of this study showed that the age range of participants was between 20-40 years. This study observed that participants were students, traders, and civil servants with 5(8.8%), 39(68.4%), and 13(22.8%) respectively. The majority of participants were primigravida (49%) and 30(52.6%) were in their third trimester. There was a significant difference in pain intensity at the eighth week ($F=5.012$, $p=0.010$) and there was a significant difference in the level of disability in the fourth week ($F=6.504$, $p=0.003$), also, there was a significant difference in the quality-of-life physical domain at baseline ($F=6.367$, $p=0.003$). Moreover, there was a significant difference of quality of life mental domain at baseline ($F=20.597$, $p=0.000$) and fourth week ($F=8.635$, $p=0.001$) with level of significance < 0.05 .

Conclusion: There was a significant effect of the stratified care using StartBack on pain intensity, disability level and health-related quality of life of pregnant women with low back pain.

Keywords: Startback screening tool (SBST), Pregnant women, Low back pain.

Introduction

Low back pain (LBP) is one of the most prevalent musculoskeletal conditions in both developed and developing nations [1-2]. Low back pain is usually defined as pain, muscle tension, or stiffness localized below the costal margin and above the inferior gluteal folds, with or without leg pain [3]. The prevalence of low back pain worldwide is estimated to be between 30% and 80% among the general population and has been found to increase with age and also during pregnancy [4].

Pregnancy results in an increase in overall body mass and a change in the center of gravity, as the pregnancy progresses, the posture adapts to the changing weight and subsequent forces imposed on the body [5-6] leading to an exaggeration of the curve in the lumbar spine [6-7]. Also, hormonal changes that occur during pregnancy causes softening of ligaments and the joints, particularly of the pelvis, to enable the fetus to pass through the birth canal more easily which results in lengthening of the abdominal muscles, decreased stability, and excessive mobility of the joints. This may be the cause of pain in the lower back and posterior pelvis [9].

Pregnancy related low back pain is a common complaint that occurs in 60-70% of pregnancies [7]. This pain is not the result of a known pathology such as disc herniation [8] but begin between the fifth and seventh month of pregnancy with highest prevalence during the third trimester [9]. In addition, pregnancy related low back pain with rate ranging from 25% to 90% of most studies estimating that 50% of pregnant women with severe LBP during pregnancy are at extremely high risk for developing a new episode of severe LBP during subsequent pregnancies, which can reduce their quality of life [10-13] and 80% of women suffering from low back pain claimed that it affects their daily routine by increasing disability[14].

It has been revealed that disability is a complex and multifactorial phenomenon [15] and is associated with high economic costs [16]. In chronic low back pain, functional disability can be partially explained by factors not related to the disease itself, such as psychological and professional factors [17], and it can impose personal, professional and family limitations [16]. A study found that 65% of the participants had functional disability, and of these, more than 80% had moderate to severe functional disability [17]. Patients with low back pain often report physical discomfort and functional limitations as well as low levels of physical activity and a decrease in social participation [17].

Chronic low back pain (CLBP) is one of the most prevalent chronic pain disorders associated with a high burden on individuals and the society [18], that can have a huge influence on the individual's quality of life (QOL). There is an inevitable concern among the CLBP patients regarding the maintenance of QOL. Some cross-sectional studies have pointed out that low back pain has an inverse relationship with health-related quality of life (HRQOL) [19-22]. Low back pain is one of the prominent health conditions affecting the quality of life of the individuals. It affects various domains of daily life from basic self-care activities to advance and complex social interactions, work and leisure activities and eventually leading to poor quality of life [23]. Greater pain severity and greater disability are contributing to poor quality of life outcomes [24].

However, the health risks and treatment associated with the use of analgesics in pregnancy are well documented and have not been satisfactory [25]. As a result, many women consider LBP as an inevitable normal discomfort to live with during pregnancy [26, 27]. Research and international guidelines suggested that it is not possible or necessary to identify the specific tissue source of pain for the effective management of mechanical back pain [28]. The pain intensity, frequency, duration, and disturbances during pregnancy have a significant impact on pregnant women performing their daily activities and the quality of life [29].

A recent study carried out by [30], suggests that individualized Physiotherapy for people with LBP, utilizing a Specific Treatment of Problems of the Spine (STOPS) approach, may be more effective in managing LBP which involves facilitating an early reduction in disability, which in turn leads to improvement in other biopsychosocial outcomes. To direct these treatment plans stratified care has been suggested as an appropriate approach [31]. However, stratification of care is the targeting of treatment to subgroups of patients based on characteristics/categories (low risk, medium risk and high risk) [32]. [33], suggested that there are three different approaches to stratification that have good evidence; Patient prognosis; matching treatment to patients prognosis such as the likelihood of persistent pain and disability (e.g. STarT Back Screening Tool [34], Responsiveness to treatment; matching treatments

to individuals who would benefit from that treatment (e.g. Treatment Based Classification Approach to Low Back Pain, STOPS), Underlying mechanisms; matching treatment to mechanisms that drive pain and disability such as pathology, pain mechanisms, negative thoughts and behaviors (e.g Cognitive Functional Approach) [35]. However, predicting disability in pregnant women with low back pain requires selecting appropriate disability measures such as STarTBack Screening Tool (SBST) and Oswestry disability index which addresses a broader concept of disability than that directly related to pain intensity.

Studies have used STarTBack Screening Tool (SBST) as a self-report method of disability risk assessment in patients with LBP [32, 36] and is a screening questionnaire consisting of 9 items related to physical and psychological statement that are used to categorize patients based on risk (low, medium, or high) for persistent LBP-related disability. The tool was developed and validated to identify subgroups of patients with LBP, to guide the initial decision making in care by physiotherapists and delivering targeted treatment accordingly [32]. It is also a simple prognostic questionnaire that helps clinicians identify modifiable risk factors (biomedical, psychological and social) for back pain disability.

However, it is imperative to stratify care in pregnant women with LBP, strategic care should be administered based on subgroups and to compare the effects of treatment on pain, disability and quality of life. Studies have used SBST as a self-report method of disability risk assessment in patients with LBP and has been used in sub- grouping and for patients with LBP [32,34,36]. SBST risk classification has predicted treatment based on risk categorization. However, there is scarce study using SBST to stratify and in delivering targeted care for pregnant women with LBP. Hence this study.

Methods

A total number of 57 participants were purposively recruited for experimental study from a Primary Health Centre in Nigeria and were stratified into three risk groups following start-back screening tools. Ethical approval was obtained from the Ethics and Research committee. Informed consent and permission to conduct research were secured before the commencement of research. Visual Analogue Scale was used to assess the level of pain intensity after which the StartBack screening tool was administered for risk stratification. The low-risk group received education on ergonomics and self-care, the medium-risk group received lumbar stabilization exercise and the high risk received both education and lumbar stabilization exercise. Also, the Oswestry disability questionnaire and quality of life questionnaire were assessed. Data were collected at baseline, 4th week, and 8th week.

Results

Socio-demographic characteristics of the participants

The majority of the participants were traders (39 (68.4),24(42.1%) were primigravida and 33(57.9%) are multigravida. In addition, 27(47.4%) were in their second trimester and 30(52.6%) were in their third trimester (Table 1)

Stratification of disability risk among participants using the Startback screening tool

The frequency (percentage) of participants stratified into low risk, medium risk, and high risk were 34(59.6%), 21(36.8%) and 2(3.5%) respectively (Table 3).

Variables	N(57)	%
Occupation		
Student	5	8.8
Trader	39	68.4
Civil servant	13	22.8
Total	57	100
Marital status		
Married	57	100
Total	57	100
Religion		
Christian	48	84.2
Muslim	9	15.8
Total	57	100
Educational level		
Tertiary	28	49.1
Secondary	27	47.4
Primary	2	3.5
Total	57	100
Parity		
Primigravida	24	42.1
Multigravida	33	57.9
Total	57	100
Trimester		
2 nd trimester	27	47.4
3 rd trimester	30	52.6
Total	57	100

Table 1: Sociodemographic characteristics of participants.

	Low X ± SD	Medium X ± SD	High X ± SD	F	P
Pain intensity					
Baseline	2.91± 1.08	3.67± 1.46	4.00± 1.41	2.795	0.070
4 th week	1.06 ± 1.09	1.71 ± 1.55	2.00 ± 1.41	1.946	0.153
8 th week	0.21 ± 0.48	0.57± 0.87	1.50 ± 0.71	5.012	0.010*
Level of Disability					
Baseline	10.41± 12.64	10.57± 12.99	32.00± 2.83	2.791	0.070
4 th week	6.41± 8.01	6.95 ± 9.77	29.00± 1.41	6.504	0.003*
8 th week	3.82 ± 5.53	5.62 ± 9.02	10.00± 0.00	1.023	0.366
Quality of life					
Physical domain					
Baseline	352.79± 83.01	403.10± 73.34	215.00 ± 77.78	6.367	0.003*
4 th week	496.47±137.82	442.14± 99.10	340.00 ± 91.92	2.398	0.101
8 th week	520.15± 72.79	522.05± 64.59	515.00 ± 0.00	0.012	0.988
Mental domain					
Baseline	544.71± 67.34	550.95± 72.52	230.00 ± 14.14	20.597	0.000*
4 th week	542.94± 61.05	552.48± 69.27	352.50±109.60	8.635	0.001*
8 th week	585.88± 20.02	578.10± 21.82	590.00± 14.14	1.040	0.360

Table 4: Repeated measure anova to compare pain intensity, level of disability and quality of life among disability risk.

Variables	X ± SD
Weight	67.854 ± 10.138
Height	1.641 ± 0.072
BMI	25.215 ± 3.547
NRS1	3.228 ± 1.282
ODQ1	11.228 ± 13.059
SF1P	366.491 ± 86.752
SF1M	535.965 ± 89.599

Table 2: General characteristics of participants

KEYS: BMI- body mass index, NRS1- pain intensity baseline, ODQ1- level of disability baseline

SF1P- quality of life physical domain baseline, SF1M- quality of life mental domain baseline, X- mean, SD- standard deviation.

Variables	N	%
Start disability risk		
Low	34	59.6
Medium	21	36.8
High	2	3.5
Total	57	100

Table 3: Stratification of disability risk among participants using SBST

KEYS: N- Frequency, %- Percentage, SBST- Startback Screening Tool

General characteristics of participants

The mean and standard deviation observed in this study for weight 67.854(10.138), height 1.641 (0.072), body mass index 25.215(3.547), pain intensity baseline 3.228 (1.282), level of disability baseline 11.228 (13.059), physical domain of quality of life baseline 366.491 (86.752) and mental domain of quality of life baseline 535.965(89.599) (Table 4).

Comparison of pain intensity, level of disability, and quality of life among disability risk using repeated measure ANOVA.

Pain intensity was significantly different in the eighth week ($F=5.012$, $p=0.010$). There was a significant difference in the level of disability in the fourth week ($F=6.504$, $p=0.003$). There was a significant difference in the quality-of-life physical domain at baseline ($F=6.367$, $p=0.003$). There was a significant difference in the quality of life mental domain at baseline ($F=20.597$, $p=0.000$) and fourth week ($F=8.635$, $p=0.001$) ($p<0.05$) (Table 5).

Discussion

This study was conducted to stratify care among pregnant women with low back pain in Ondo town, by using the Startback screening tool (SBST) and assessing pain intensity, level of disability and quality of life using appropriate measures. In this study, it was observed that the participants were stratified into low, medium, and high disability risk while the low disability risk took the highest frequency which is contrary to a study conducted by [31] that classified patients using the SBST with medium risk taking the highest frequency.

This study also found that the majority of the pregnant women with LBP in Ondo town had tertiary education compared to those with secondary and primary education. This is in contrary to a study from Family Practice and Palliative Care by [32] stated that majority of pregnant women being primary and secondary graduates.

This study also revealed that there was a significant difference in pain intensity across stratified care groups among pregnant women. These results are in line with [33] who showed that despite high-risk patients starting with more pain and disability at baseline they experienced greater improvement throughout care. In this study, it was observed that the Lumbar Stabilisation Exercise had a significant effect on the pain intensity of pregnant women with low back pain. This result is in correlation with the outcome of the research done by [33]. Alzubeidi et al [34] explained in their systematic reviews that Lumbar Stabilization Exercise is effective in the relief of low back pain after local back activation. [35], also reported that there is strong evidence that stabilization exercises improve low back pain symptoms, especially pain intensity.

It was observed that there were significant changes in the pain intensity of pregnant women with low back pain who underwent Lumbar Stabilisation Exercise across eight weeks. This result of reduction in pain intensity of women with pregnancy related low back pain who had undergone stabilization exercise has been observed in previous studies [34, 36]. Stabilisation exercise has been seen to improve the control of spinal muscle increasing stability and strengthening the muscles which would, in turn, reduce the level of pain experienced [37, 39].

This study also revealed that there was a significant difference in the level of disability across stratified care groups among pregnant women at follow-up. This is contrary to a study by [37] which states that there was a significant difference at baseline between the 3 risk groups with respect to pain, disability, back beliefs, and distress.

This study also revealed that there was a significant difference in the quality of life across stratified care groups among pregnant women this is in line with a study by [38] who reported that the mean (SD) score of quality of life after the intervention was significantly higher to before the intervention.

Conclusion

There was a significant effect of the stratified care using StartBack on pain intensity, disability level, and health-related quality of life of pregnant women with low back pain.

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