

# EXPLORATORY FACTOR ANALYSIS IN ESTABLISHING DIMENSIONS OF INTERVENTION PROGRAMMES AMONG OBSTETRIC VESICOVAGINAL FISTULA VICTIMS IN NORTHERN NIGERIA

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## Abstract

Obstetric vesicovaginal fistula (VVF) is a birth-related injury that leads to uncontrollable urine leakage via the vagina. Recently, the Nigerian government has implemented several intervention programmes (IVP) to encourage fistula women to seek treatment. However, despite the government's effort, the number of victims who turn out for cure is not encouraging. Earlier studies were unable to integrate appropriate IVP and explore the various dimension and factor loadings of IVP in health-seeking behaviour. Thus, this study's objective was to analyse the diverse dimensional components and factors loading of IVP and its influence on health-seeking behaviour among VVF women. This study utilized a cross-sectional survey design and SPSS software v23. A total of 321 questionnaires were administered, 302 were valid for onwards analysis. The study's result showed one component with eigen value exceeding 1. Also, two components emerged from the report, namely rehabilitation and campaign programmes. Additionally, the loadings of the 15 items in the components ranged from 0.66-0.89. Moreover, the correlation matrix of the construct's items has coefficients correlation values of 0.3 and above, indicating that the items are not highly correlated. Furthermore, the construct's reliability was accepted since the result showed Cronbach's alpha value of .73. Similarly, the construct validity was significant since the percentage of variance explained (AVE) was 76.0%. Besides, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was satisfactory at 0.94. Also, Bartlett's test of sphericity was significant statistically, at 0.00. Based on the preceding result, the study indicated appropriate intervention programmes, especially rehabilitation, inspired health-seeking behaviour among VVF women in northern Nigeria. Precisely, this study shows that by enforcing proper laws and policies regarding the use of maternal and child healthcare programmes, several victims of fistula will seek a cure. Also, providing robust funding, leadership, and governance that allows for supervision and accountability encourages the VVF centres to offer intervention programmes and emergency transportation services for the victims with VVF emergencies, among others, facilitate the implementation of effective IVP. Consequently, this study recommends that administrators and policymakers should focus attention on improving the rehabilitation and campaign programs elements, including ree-surgery, skills acquisition, an educational campaign, and girl-child education.

**Keywords**--- Exploratory factor analysis, intervention programmes, dimension, obstetric fistula, Nigeria

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## INTRODUCTION

The obstetric vesico vaginal fistula occurs mainly due to prolonged obstructed labour (Maheu-Giroux, Fillipi, Sekou, Castro, Maulet, & Meda, 2015 & Muhammad, 2018). Labour becomes prolonged when a woman exceeds 24 hours in delivering a child while on labour (Muhammad, 2018). An unusual complication of prolonged labour is the existence of birth-related injury connecting the vagina and the urinary bladder or vagina and rectum, which leads to uncontrollable leakage of urine and faeces via the vagina, offensive odour, and other social, medical, and psychological feature and consequences (Ezegwi, & Nwogukojo 2015, & Muhammad, 2018).

Globally, fistula disease agonises more than 2-2.5 million women of reproductive age (Ezegwi et al., 2015 & FMOH, 2019), with a projected 50,000-100,000 afflicted women with the disease annually, mostly in unindustrialised nations comprising Nigeria (Muhammad, 2018). In Nigeria's circumstance, an estimate indicates that there are about 800,000-1,000,000 victims of the fistula disease, with nearly 20,000 new cases suffering from the disease condition annually (Muhammad, 2018). Northern Nigeria alone has an estimated 600,000 cases of fistula, accounting to an estimated 60-70 per cent of the total number of the victims with the disease in Nigeria, with an average 2 to 5 instances arising among every 1,000 birth in northern Nigeria matched to 0.44

cases for every 1,000 delivery in Southern parts of Nigeria (FMOH, 2016 & Muhammad, 2018).

It is instructive to note, although the vast number of victims with obstetric fistula in Nigeria, merely around 7000-8200 repairs were performed annually, which makes the disease situation worse (FMOH, 2019 & Muhammad, 2018). A report from the Nigerian Federal Ministry of Health indicated that the inability to eliminate fistula disease in several states in northern Nigeria could be associated with several fundamentals, including cultural taboos, inadequate training of healthcare professionals, and gender of health professionals, among others (Muhammad, 2018). Moreover, perhaps, obstetric vesico vaginal fistula disease might have persevered in Nigeria because most victims of the disease were unable to access appropriate health intervention programmes (FMOH, 2019 & Muhammad, 2018). As a result, when necessary and useful health intervention programmes are available and widely accessible, several victims of the obstetric fistula disease could be able to utilise the services (FMOH, 2019). Conversely, Akhter (2015) established that communication campaign intervention, even when provided, is ineffective to positively modify the behaviour of patients that develops lungs and heart diseases as a consequence of cigarette smoking.

In line with the preceding inconsistencies, Muhammad (2018) suggested that a moderator variable can be presented if there is proof that previous intervention programmes have not been effective or are weak. Thus, the contradiction in the earlier studies is why this study emerged to address the weaknesses of the previous research, by introducing a moderator to strengthen the relationship between intervention programmes and health-seeking behaviour by summarising the construct's items and extracting its dimension.

Consequently, this study's objective was to perform an exploratory factor analysis using principal component analysis that will help extract the diverse dimensional components and factor loadings of the construct of intervention programmes for obstetric vesico vaginal fistula in northern Nigeria.

## LITERATURE REVIEW

### Exploratory Factor Analysis

Factor analysis is defined as a technique for data reduction by summarising the variable structures into a manageable aggregate (Hair, Hult, Ringle & Sarstedt 2014).

Exploratory factor analysis (EFA) is defined as a method utilised to uncover the fundamental structure of a comparatively large set of variables (Adam & Adnan, 2019). Additionally, The construct of exploratory factor analysis refers to a statistical technique used to reduce quantitative data into a fewer set of summary variables as well as explore the essential theoretical organisation of the association among variables and the respondents (Julie, Norma, Chandima, Erin, Kelly, Kulig, Kilpatrick, Martin, Morgan & Maclead, 2017). Also, Adam et al. (2019) suggested that exploratory factor analysis is a statistical procedure in factor analysis whose primary goal is to ascertain the rudimentary association between assessed variables.

According to Hair et al. (2014), in conducting EFA, certain conditions must be met before performing factor analysis. A study must have a minimum sample size of 300. Hair et al. (2014) explained that the general rule of thumb for a factor analysis to be performed is to have a minimum of 5 respondents for each variable in a study. Again, the use of principal component analysis (PCA), which extracts factors based on eigen value higher than or equals to 1.0, is essential in factor analysis (Hair et al. 2014).

Similarly, Hair et al. (2014), for instance, suggested that factor analysis is considered suitable when most of the correlation coefficient of items is at least 0.3 and above. Besides, Bartlett's test of the sphericity needs to be significant at ( $p < 0.05$ ). Also, Kaiser-Meyer-Olkin (KMO) as well as an overall measure of sampling adequacy (MSA) should be at least 0.5 and above for functional analysis of factors; if the value is lower than 0.5, this shows the need for presenting new variables or collecting additional data (Adam et al. 2019).

In line with the sampling adequacy measure, Hair et al. (2014) recommended classifying KMO as values between 0.5 and 0.7, which are considered average, 0.7 and 0.8 good; 0.8 and 0.9 as very good, and value above 0.9 excellent. Also, Hair et al. (2014) recommended that when determining the number of factors (components) to extract, it is essential to consider other vital output (KMO, and total variance explained. The identification or naming of factor should solely be based on the item with the highest loading.

Based on the recommendations made by earlier scholars (Hair et al. 2014 & Adam et al. 2019) on the need to conduct EFA in most studies, the current study will analyse the dimension and items factor loadings of intervention programs among obstetric fistula women in northern Nigeria.

### Intervention programmes

Intervention programmes are the blend or combination of activities or plans (social and health, among others) envisioned to modify or increase health-seeking behaviour among sick individuals (Hazelden, 2015). Similarly, FMOH, (2019) contends that intervention programmes are activities meant to inspire the infected individuals to participate in measures to remedy ailments, such as through partaking in drug treatment, surgery, awareness or educational information through pamphlets. Again, the concept of intervention programmes involve actions embarked on to address some issues, such as health problems, through stimulating people to participate in the various health-related programmes (Muhammad, 2018). Also, Hazelden (2015) summarises numerous intervention programmes with the potential to increase health-seeking behaviour, including drug therapy, surgical intervention, counselling, and awareness campaigns.

Concerning health intervention programmes, the Federal Ministry of Health (2019) clarified that there are government and non-governmental programmes accessible in developing countries that encourage people to participate in treatment, just as similar programmes have been used in developed societies to eradicate illnesses. So for instance, the most contemporary programmes used to eliminate diseases include but are not limited to awareness campaigns programmes concerning the prevention of HIV/AIDS; the thematic evaluation, and campaigns to end fistula programmes; obstetric fistula needs assessment, and the literacy campaign programmes (FMOH, 2019).

In line with the other opinions, Akhter (2015) endorsed the use of sufficient educational campaign programmes among people living with HIV/AIDS as a method to make individuals conscious of risky behaviours including unprotected sexual contact with the sick persons, use of infected needles and syringe among others.

Moreover, based on the significance of intervention programmes, the FMOH, (2019) and Odoemelan (2015) recommend the continuous utilisation of awareness and rehabilitation programmes in the worship places; the preceding activities could influence health-seeking behaviour and by extension limit the prevalence of diseases among the vulnerable population. Furthermore, Bellows, Bach, Baker, and Warren (2014) indicated that numerous intervention programmes in recent times had been applied in Africa to inspire obstetric fistula victims to partake in therapy. So for instance, in Kenya, the programmes implemented include education campaign on free transport, surgical repairs, and counselling, and in Tanzania, the intervention programmes applied to encourage health-seeking behaviour among patients include free transportation, training of health personnel and surgical repairs (Bellows et al. 2014). In Nigeria, the programmes implemented to stimulate sick people to seek cure include educational brochures, community sensitisation, training of health personnel, and surgical repairs, among others (Bellows et al. 2014 & FMOH, 2019). Specifically, in northern Nigeria, the frequently implemented government intervention programmes encouraging patients to seek treatment include awareness campaigns through town criers and community outreach, with volunteers enlightening people in mosques and churches and other worship centres (Bellows et al. 2014 & FMOH, 2019). Over again, the measures employed to tackle obstetric fistula menace include engaging traditional and religious leaders in enlightening people concerning the causes and prevention of the fistula and enlightening afflicted disease women on where they can seek a cure (Muhammad, 2018). Nonetheless, despite the implementation of the free-surgical care, counselling, awareness campaign, and skills programmes in northern Nigeria, the programmes face challenges that weaken their effectiveness, including poor services, poor participation,

and reduced funding, among others (FMOH, 2019). The ineffectiveness of the campaign is evident by the low rate of repairs in Nigeria, in which less than 9000 clients were cured every year (FMOH, 2019 & Muhammad, 2018).

Besides, a report by the evaluation committee suggested that the thematic evaluation programme for obstetric fistula from 2019-2023 provided an understanding of various intervention programmes that were implemented in Nigeria that focused mainly on prevention, treatment, and rehabilitation (FMOH, 2019). Regarding surgical intervention programmes, Table 1 indicated the number of surgical operations performed in the 18 obstetric fistula centres in Nigeria beginning 2014-2017. The preceding Table reported some progress was recorded in the national response evaluation of the six zones higher than the previous surgical intervention; However, the progress made is

not significant compared to the estimated number of fistula cases in Nigeria. Between the period of 2014-2017, overall, 8047 surgical repairs were undertaken in the 18 centres, which implies that on the average 2012 repairs were performed annually (FMOH, 2016 & FMOH, 2019). Also, the yearly mean amount of repairs for each centre providing routine operation reached 10 in University College Hospital, Ibadan, Nigeria to 360 in National Obstetric Fistula Care Katsina, Nigeria with a mean of 12 (FMOH, 2019)

Therefore, by the rate of fistula occurrence in Nigeria, the ratio of intervention programmes is inadequate, considering the high prevalence rate of obstetric vesico vaginal fistula disease in Nigeria, as indicated in Table 1 (FMOH, 2019).

**Table 1.** Distribution of Fistula Repairs in Obstetric Fistula Treatment centres in Nigeria, 2014-2017

Name of Facility	Zone	2014	2015	2016	2017	Conservative Treatment	Total
Obstetric centre Ningi	North East	54	131	164	157	28	534
VVF centre Damaturu	North East	0	0	100	30	0	130
VVF centre Maiduguri	North East	0	0	100	100	0	200
VVF centre Yola	North East	0	0	100	100	0	200
General Hospital Ogoja	South-South	14	17	17	62	0	110
VVF centre Calabar	South-South	0	0	50	100	0	150
Family life centre, VVF hospital Uyo	South-South	89	134	97	118	0	438
National obstetric fistula centre Abakaliki	South East	230	246	194	183	0	853
Hajia Gambo Sawaba VVF centre Zaria	North West	38	123	102	103	6	372
Laure VVF centre Kano	North West	122	388	270	276	55	1109
National obstetric fistula centre Babbar Rugga, Katsina	North West	352	371	357	245	59	1384
Gesse VVF centre, Birnin Kebbi	North West	55	140	171	152	16	534
Maryam Abacha Women and Children Hospital, Sokoto	North West	93	183	103	134	60	573
Farida General Hospital, Gusau	North West	21	49	95	77	15	257
Sobi Specialist Hospital, Ilorin	North Central	0	44	13	49	3	109
Evangelist Hospital, Jos	North Central	315	305	336	322	0	1278
University Hospital College, Ibadan	South West	18	6	6	20	0	50
Adeoyo Government Hospital, Ibadan.	South West	0	18	18	29	0	65
Wesley Guilds. Hospital, Ilesha	South West	0	0	0	23	0	23
		1401	2153	2293	1958	242	8047

Source: FMOH, 2019

Concerning rehabilitation programmes, from 2014-2016, Nigeria, rehabilitated 595 victims living with vesico vaginal obstetric fistula in five key states in North West Zone, Nigeria, as indicated in Table 2 (FMOH, 2019). In recent years, the Nigerian government and some non-governmental organisations such as United Nations Population Fund (UNFPA), Millennium Development Goals (MDG), and international NGOs like Fistula Foundation USA. have delivered six months of skills acquisition training programme (FMOH, 2019). Following the successful acquisition of the skills, recipients are provided with a start off essential equipment assistance such as knitting machines, sewing machines, or based on the skills the women acquired to encourage the centres to provide rehabilitation and reintegration services. (Muhammad, 2018 & FMOH, 2019). Similarly, the stakeholders in intervention programmes for obstetric fistula reintegrates the cured fistula victims back to their societies and conducts follow-up care to monitor patient's improvement (FMOH, 2019).

**Table 2.** Rehabilitation Data from some Rehabilitation centres in Nigeria from 2014-2017

State	Number of women rehabilitated by year				
	2014	2015	2016	2017	Total
Kano	50	0	25	0	75
Jigawa	100	100	100	100	400
Sokoto	0	100	10	0	110
Kebbi	0	50	0	0	50
Kaduna	0	50	10	0	60
Ebonyi	0	0	72	60	132
Akwa-Ibom	4	0	20	36	60
Katsina	100	0	0	53	153
Borno	51	20	0	12	83

Total	305	320	237	261	1123
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Sources: FMOH (2019)

The thematic evaluation programmes implemented previously in Nigeria, as indicated in both Tables 1 and 2 possessed some challenges, including insufficient staffing in the healthcare facilities, inadequate facilities, poor coordination of activities, and slow pace of repairs (Odoemelan, 2015). However, despite the above shortcomings of the intervention programmes, the data on the preceding Tables indicated some level of improvement in surgical repairs during 2014-2017 compared to only about 4000 during 2005-2008 (FMOH, 2019).

Based on the preceding discussion, the level of intervention programmes is not adequate compared to the ratio of obstetric fistula occurrence in Nigeria. In line with the other situation, Bellow et al. (2014) and Muhammad (2018) recommended that when previous intervention programmes are weak or ineffective, the scenario had justified the introduction of adequate and appropriate intervention programmes to promote health-seeking behaviour. Thus, the current study focused on identifying dimensions and factor loadings of perceived appropriate intervention programmes that encourage fistula women to seek for help.

### Obstetric Vesicovaginal Fistula

Obstetric vesico vaginal fistula, which is openly related to maternal death, is an abnormal linkage between the vagina and urinary bladder that may progress following prolonged obstructed labour. The disease is characterised by urinary incontinence (FMOH, 2019). The term is defined as the abnormal hole extending between the bladder and the vagina, which permits the incessant spontaneous release of urine into the vaginal canal (Baba, 2014&Tuncalp, Tripathi, Landry, Stanton, & Ahmed, 2015).

Girls and Women with obstetric vesico vaginal fistula pass through severe psychological and physical misery, which keep on until the disease is surgically corrected (Muhammad, 2018). The ailment is the most horrible maternal disease affecting girls and women in less affluent nations, making it a crucial international public health apprehension (FMOH, 2019).

Women are agonised by the menace of fistula throughout their lives unless the disease is cured (Baba, 2014&Maheu-Giroux et al. 2015). However, certain vesico vaginal fistula that is fewer than four-five weeks period could be treated successfully with appropriate intervention programmes (Muhammad, 2018 & FMOH, 2019).

Several studies (Odoemelan, 2015 & Hazelden, 2015) have focused on obstetric vesicovaginal and intervention programmes in health-seeking behaviour. For example, Odoemelan (2015) suggested that the development and introduction of the appropriate intervention programmes in manners that inspire positive attitudes are essential to decreasing the high rate of diseases among communities. Additionally, Hazelden (2015) contends that intervention programmes such as surgery and skills acquisition were found to influence health-seeking behaviour among women with maternal health challenges.

It is instructive to note that previous studies (Baba, 2014; Akhter, 2015 & Maheu-Giroux et al. 2015) related to obstetric fistula and intervention programmes have some weaknesses. The major flaw of the earlier studies revolved around their failure to conduct EFA, which should have allowed for summarising the loadings of the essential items of the constructs. Therefore, This study will bridge the gap identified from the earlier study.

In summary, given the review of the other constructs, few studies perform exploratory factor analysis to determine the dimensions and factor loadings of the construct of intervention programmes among individuals with health challenges. In short, most previous studies that examine the dimension of intervention programmes and its influence on health-seeking behaviour generally focus on patients with other related diseases in Europe, the USA, and Kenya. Precisely, in northern Nigeria, there is not a single study to the knowledge of these investigators that examines exploratory factor analysis to determine the dimensions and factor loadings of intervention programmes among the obstetric vesico vaginal fistula victims in northern Nigeria. Based on the preceding exposition, these scenarios created gaps for this study to fill by conducting an exploratory factor analysis to determine the dimensions as well as items factor loadings of intervention programmes among victims of fistula obstetric VVF disease in northern Nigeria.

### THEORETICAL FRAMEWORK OF THE STUDY

The underpinning theory for the current study was the health beliefs model (HBM) developed by Rosenstock in the 1950s to elucidate health-seeking behaviour among people, about obstetric fistula patients' effort to participate in intervention programmes that improve health and treat diseases. Precisely, the theory tries to predict the health and illness behaviour of a person, which is achieved by focusing on the attitude and beliefs of individuals (Sina, Jegede, & Kunle 2014&Odoemelan, 2015). The model is significant as it helps in appreciating why people seek treatment or follow due recommendations of health professionals.

The underlying assumption of HBM is that individuals' capacity to participate in intervention programmes depends on their perceived susceptibility to disease, perceived seriousness of the illness (perceived threat), and perceived benefits that accrue due to participation in the activities (Sina et al. 2014). In the context of obstetric fistula patients, therefore, it implies that for the fistula victims to take part in the intervention programmes is contingent on the perceived severity of the disease as well as the consequences of the disease on the victims.

Another critical factor that could motivate disease victims to participate in cure is 'cue to action,' which refers to the external and internal factors that encourage health-seeking behaviour. Precisely, the other factors that support participation in treatment include numerous intervention programmes such as mass media campaign programmes through the radio, educational programmes via patients' brochure, counselling, and skills acquisitions programmes (Sina et al. 2014).

### Objectives of the Study

The objectives of this writing are to:

1. Analyse the diverse dimensional components of intervention programmes for obstetric fistula in northern Nigeria
2. Analyse the principal factors loading of the items in exploring the intervention programmes for obstetric fistula in north Nigeria
3. Recommend specific proposals and ways to implement intervention programmes effectively in northern Nigeria

### Research Questions

This study will answer the following research questions:

1. What are the diverse dimensional components of intervention programmes for obstetric vesico vaginal fistula in northern Nigeria?
2. What are the principal factors and loadings of the items in exploring the intervention programs for obstetric vesico vaginal fistula in the north of Nigeria?
3. What are the recommendations and ways to implement intervention programmes effectively in northern Nigeria?

**RESEARCH METHODOLOGY**

The sampled population of this study was the obstetric vesico vaginal fistula women in Zamfara and Sokoto states in northern Nigeria. A total of 302 women were finally selected from two vesico vaginal fistula centres. This study analyses the factors structure of the construct of intervention programmes utilizing a quantitative analysis software called the statistical package for social sciences (SPSS) software v22. The study subjected the data to the exploratory factor analysis (EFA) using the principal component analysis to determine the number of factors of intervention programmes. Based on the EFA, the outcomes from the screen plot have shown two factors or components.

Similarly, the analysis with SPSS extracted two components based on the initial eigen values higher than or equals 1, and the percentage of the variance of factors that orthogonally rotated was 76%. Both factors from the screen plot and factors that orthogonally revolved were in line with Hair et al. (2014) assumption. This study employed 21 items questionnaire associated with the influence of intervention programmes on health-seeking behaviour among obstetric fistula women in northern Nigeria. The study questionnaire was adapted from the previous works of Keating, Meakers & Adeniyi(2006), Karki& Agrawal (2008), and Muhammad (2018). Again, both face and content validity of the measurement instruments were examined by professors at the Universiti Malaysia and Usmanu Danfodiyo University, Sokoto, to ensure that the measures are appropriate for this study.

Also, the reliability of the measurement instrument was evaluated by utilising Cronbach's Alpha coefficient. Also, the questionnaire's items were designed and administered through a 5 point Likert scale, in which obstetric fistula patients were required to respond too strongly disagree, Disagree, Neutral, Agree, and Strongly Agree.

**RESULTS AND DISCUSSION**

The intervention programmes are the construct that serves as the regulating variable in the present study, which was initially measured using 21 items. Regarding the factor loading of intervention programmes, Table 1 shows the loadings of 15 items in the components, which are above the threshold of 0.5. In the current study, the least factor loading among the items is 0.66, while the highest factor loading is 0.89. Six items out of 21 items (IVP02, IVP09, IVP10, IVP11, IVP12 & IVP13) were deleted due to low commonality. The deleted items did not match with other items in the component. A review of the correlation matrix indicates that all the coefficients correlations have values of 0.3 and above, implying that the constructs' items are not highly correlated.

The construct was measured as multi-dimensional, which was open to principal component analysis. The instrument's reliability is acceptable since the current result (.73) is in line with the Cronbach's alpha threshold value of 0.7 and above. Correspondingly, the construct validity was significant since the result of the study indicated that the percentage of variance explained of items in the factors was 76.0%, which is higher than the recommended threshold of 40%. According to Hair et al. (2014) and Muhammad (2018), when the percentage of variance explained of items in a respective factor is above 40%, it indicates that the construct is significant to the research, in this case, the construct of intervention programmes influences health-seeking behaviour. Moreover, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy showed a value of 0.94, which is above the benchmark of 0.50. The preliminary result indicates that the study sample size was appropriate for the conduct of factor analysis. Also, Bartlett's test of sphericity is statistically significant since the p-value stands at 0.00.

**Table 3.** Result of Factor Analysis of Intervention Programmes

	Items	Loading 1
IVP20	I am confident that VVF repairs made me live a healthy life as before.	.89
IVP21	I believe allowing me to make decisions about my care by health workers helped me return to a healthy life.	.84
IVP17	I am confident about my VVF disease because of a health awareness campaign.	.84
IVP16	I still believe that VVF disease can be cured by traditional medicine.	.83
IVP19	I believe that the teaching I received from staff takes away the fear I have about VVF disease.	.82
IVP15	I believe that my family supported me as a result of the VVF campaign.	.79
IVP03	I learn about the VVF campaign by watching television.	.77
IVP18	I still believe the knowledge I got is enough to take care of the problem from my disease.	.76
IVP14	I believe the advice I received about my VVF disease has been helpful	.73
IVP01	I hear about the VVF campaign to create awareness through the radio.	.69
IVP04	I have received excellent advice from the VVF campaign.	.66
		<b>Loading 2</b>
IVP07	I get more knowledge of how to take care of VVF problems from the campaign.	.87
IVP06	The information I hear from the campaign takes away the fear I have about VVF disease.	.85
IVP08	I believe my full participation in VVF care is because of the VVF educational campaign programme.	.85
IVP05	I believe the harmful traditional practice causes VVF disease.	.83
	Eigenvalue	9.483
	Percentage of variance	76.0
	KMO	.94
	Bartlett's test for sphericity	4415.356
	Significance	.000

Table 1 shows the principal component analysis (PCA) that shows one component, eigen value-exceeding 1. Two factors were extracted from the PCA, which were named rehabilitation programmes for component one. The second component was called campaign programmes justification for the names given to the two components is in line with Hair et al. (2014). They suggested that while naming the extracted factors or components in a study, investigators should be guided by items with the highest loading in a component. Thus, based on the other opinion and from the result in Table, the first three items with the most top-loading in component one are characterised by statements such as 'trying to make VVF women live a normal life as before,' which is suggestive of a rehabilitation programme. The second component's highest loadings show statements that characterised the benefit of campaign programmes. Therefore, the name 'campaign programmes' was given to the second component of this study.

**CONCLUSION**

This study has attained the aim and objective for which it set out to achieve. Through employing EFA, the paper has presented valid diverse extracted dimensional components of intervention

programmes, that influence health-seeking behaviour among obstetric vesico vaginal fistula in northern Nigeria. The two extracted components are rehabilitation Programme for component one and campaign Programme for component two, which sufficiently explained the importance of intervention programs on health-seeking behaviour.

Also, the EFA undertaken in this study has contributed to summarising the dataset into a manageable dimension as well as presenting measurement items loading that best helped to name a factor necessary for exploring the particular components of intervention programs, which is in line with the views of Hair et al. (2014) & Muhammad (2018). The key steps and procedures conducted in factor analysis include assessing the eigen value, which was found to be higher than 1 (9.483). Again the percentage of average variance explained was examined, which is higher than the threshold of 40% (76.0%). Similarly, the KMO-measure of sampling adequacy examined was found adequate at 0.94. Likewise, Bartlett's test of sphericity was statistically significant, as the p-value stands at 0.00. Implying the result backs the factorability of the correlation matrix. Additionally, the factor loadings among the items range from 0.66 to 0.89.

In line with the preliminary result, this study recommends specific proposals and ways to implement intervention programs in northern Nigeria effectively. Since obstetric vesico vaginal fistula presents enormous psychological, social, and economic challenges such as stigma, discrimination, abandonment, and neglect with little support from the victim's husbands. The strategy for the effective implementation of intervention programmes should prioritise the following areas: First, Nigeria is full of laws and policies; however, translating the rules and plans into action remains a foremost challenge. In line with the above problems, regulations, and procedures regarding the use of mothers' and child healthcare services in Nigeria must be enforced. The sick and their spouses who break the laws should be sanctioned appropriately. Second, the Nigerian government and other stakeholders must develop client-centred needs-based rehabilitation and reintegration programmes strategies that meet the needs of individual clients.

Third, to encourage the sound implementation of intervention programmes for VVF victims, both non-governmental, community-based, and faith-based organisations should be to perform rehabilitation and integration programmes. The that involve economic empowerment and psychosocial assistance to the women, such as the provision of sewing machines, grinding machines, and knitting machines along with other supplies to encourage the centres to provide rehabilitation and reintegration services. In the same vein, communities and NGOs need to be supported to reintegrate the treated women back into their people and ensure follow-up care to monitor the progress of the patients. Fourth, governance provides accountability, which assists in delivering quality interventions programmes to the obstetric fistula women. Consequently, there is the need to carry out advocacy meetings with key obstetric VVF actors and stakeholders, including agents from other critical sectors, into their strategies and activities. Finally, since most of the principal beneficiaries of intervention programmes reside in remote areas that are difficult to access, there is the need for government and other development partners to make available emergency transportation services for the victims with obstetric vesico vaginal emergencies.

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