

Empowering Rural Communities: Role of Accredited Social Health Activist (ASHA) Workers in Health Quality

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ABSTRACT

The study aimed to examine the role of ASHA workers in improving the health and Quality of Life of the female rural population in selected districts of Tamil Nadu in India. The study is restricted to the geographical boundaries of the northwest rural districts of Tamil Nadu using a structured questionnaire administered through an Accredited Social Health Activist (ASHA) to collect the primary information from the rural women & adolescents. The cluster sampling method was adopted to arrive at a sample size of 605 respondents. SPSS and JASP were used to validate the hypothesis through Structural equation Modelling. The results obtained confirm that there is a significant impact of ASHA workers in intervening towards the health quality Improvement towards the female population in addressing PCOD/PCOS concerns that facilitate in creating awareness among the females. The practical implications of this study will encourage government to take measures to educate and create awareness programs about various diseases, problems related to reproductive organs of women.

Keywords: Health Quality; ASHA Worker; Rural Health; Structural Equation; Modelling and Awareness; PCOD; PCOS; Population; Rural Women; Female; Families and Communities.

1.0. Introduction

Women in rural areas have a crucial role in helping their families and communities achieve food and nutrition security, generate income, and enhance their general well-being (Dios-Aguado et.al., 2021). They support local and international economies by bolstering agricultural and rural businesses. In addition to fostering inclusive and sustainable economic growth, promoting and ensuring gender equality (Obol et.al., 2021), and empowering rural women through decent work and productive employment improve the efficacy (Okemo et.al., 2020) of programs aimed at reducing poverty, ensuring food security, and mitigating and adapting to climate change. Compared to urban women, rural women have worse health outcomes and less access to medical care (Lennep et.al., 2020). Many rural communities have a dearth of medical professionals, particularly those who specialize in women's health. Women in rural areas are less likely to work, and when they do, they often make less money than men. Many rural women work in low-skilled, low-productivity, low-paying jobs with lengthy hours, unfavorable working conditions (Jungari and Paswan, 2019), and no social safety. The awareness level of health care facilities is found to be very low, especially among rural women in the developing poor countries (Roy et.al., 2021). The health care provided to rural areas is highly disproportionate to the needs of rural women and abnormally low (Smith et.al., 2020) as compared to urban areas. Ovaries are the reproductive organs of a female that control the menstrual cycle and the production of hormones like estrogen, progesterone, inhibin, relax in, etc., (Bhagwat & Jijina, 2020). PCOD (Polycystic Ovarian Disease) and PCOS (Polycystic Ovary Syndrome) are common medical disorders among females that are of concern in prevailing current lifestyle and food habits. PCOD is a medical disorder in which a woman's ovaries frequently generate immature or partially mature eggs (Kambala et.al., 2020),

which eventually develop into ovarian cysts. It is a syndrome in which the ovaries frequently generate immature or partially mature eggs (Singh et.al., 2022), leading to few, odd, or exceptionally extended periods. On the ovaries, several little fluid-filled sacs form. They might not consistently release eggs frequently, leading to too much androgen, a masculine hormone (Thapa and Aro, 2021). This condition affects 10% of women worldwide. Poor lifestyle choices, obesity, stress, and hormone imbalance all contribute to this condition (Joshi et.al., 2014).

The previous contribution to the literature has examined the factors influencing the medical disorder in the form of PCOD or PCOS, cross-sectional study, prevalence of this syndrome, determinants, etc., (Ashraf et.al., 2020). However, the relationship between these medical disorders and the health-related quality of life, and involvement of ASHA workers hasn't been studied (Cornish et.al., 2021).

1.1. Research Questions

The research questions that guided to explore answers through this research are;

- (a) Are the rural adolescents and women aware of PCOD or PCOS?
- (b) Can there be any relationship between Health-Related Quality of Life and the mentioned medical disorders?
- (c) Will ASHA workers facilitate in improving the health quality among rural women?

1.2. Objectives

The objective of the study involves as listed below;

- (a) To examine and the impact of ASHA Workers in improving the health-Related Quality Life (HRQL) among the rural population with special reference to PCOD or PCOS.
- (b) Understand the investigation shall be made towards the level of awareness of PCOD/PCOS.
- (c) To investigate the symptoms of these medical disorders among the rural women population.

1.3. Hypothesis

The hypothesis framed based on the objectives comprise as below;

- (a) H1: Rural women are not aware of the factors leading to PCOS.
- (b) H2: There is positive role of ASHA workers in creating improved HRQL among the rural women.

2.0. Literature Review

It does not affect a woman's ability to conceive naturally; with the right medicine, she can still ovulate and carry her pregnancy to term without any major issues. As a result, the ovaries enlarge and release a lot of androgens (Rossouw and Ross, 2021), which can lead to infertility, irregular menstruation periods, hair loss, and unnatural weight gain. Some women realize they have symptoms around the time they get their first period, while others don't until they've put on a lot of weight or are having difficulties getting pregnant (Gupta et.al., 2018). PCOS is a significant medical disorder that affects 0.2% to 2.5% of women worldwide. A more severe case of PCOD, which is a metabolic condition (Matore et.al., 2021), can cause anovulation, in which the ovaries stop producing eggs. It

has a significant impact on women's fertility (Chaudhuri et.al., 2020). Women with PCOS are unable to ovulate regularly, making pregnancy difficult for them. There is a chance of miscarriage, early birth, or pregnancy difficulties (Habib et.al., 2021) if they get pregnant. Women who have this illness are at great risk for developing endometrial cancer, type 2 diabetes, heart disease, high blood pressure, and other dangerous problems (Patel et.al., 2018). A woman with PCOS (Polycystic Ovary Syndrome) will experience hormonal imbalance during her reproductive years (between ages 12 and 51). Increased levels of male hormones (Ram et.al., 2020) can cause women to skip menstrual cycles, have irregular ovulation that makes it difficult to get pregnant, and experience abnormal hair growth on their bodies and faces at the same time (Ademas et.al., 2020), this can result in diabetes and heart disease. It is a significant medical issue that needs to be treated surgically or with the appropriate medical care (Gill et.al., 2012).

Most often, women with PCOD & PCOS are unaware of this medical disorder with common symptoms that affect the ovulation and ovaries like ovarian cysts, increased levels of male hormones, and irregular periods (Sommer et.al., 2021). Only a few numbers of researchers participated in the study of PCOS prevalence in various Indian regions. According to the extremely scant statistics, the prevalence of PCOS in India ranges from 3.7% to 22.5%. It is exceedingly challenging to determine PCOS prevalence in India due to a lack of data and varied regional conditions (Nidhi et.al., 2011). A body with an excess of insulin may produce more androgen, a male hormone that is exceedingly rare in females and interferes with ovulation. The ovaries produce excessively high levels of androgen hormones (Sreeramulu et.al., 2022), which can cause hirsutism and acne (hair growth on the face and body). There is a genetic association between PCOS in females, which causes low-grade inflammation to boost androgen production, which can cause blood vessel or cardiac problems (Kayal et.al., 2021).

Young women are very little informed about PCOS, especially in rural areas. To prevent long-term problems, doctors and other medical professionals should play a significant part in raising awareness of the condition (Erchick et.al., 2020). Early diagnosis of PCOS is important as it has been linked to an increased risk of developing several medical conditions including insulin resistance (Aggarwal et.al., 2021), type 2 diabetes, high cholesterol, high blood pressure, and heart disease. It is an emerging health problem during adolescence therefore promotion of healthy lifestyles and early interventions are required to prevent future morbidities (Bharathi et.al., 2017). The Ministry of Health and Family Welfare Department introduced Accredited Social Health Activist (ASHA) personnel in 2005 to improve accessibility, availability, and acceptance of healthcare infrastructure primarily focused in rural locations (Mukherjee et.al., 2020). These are female activists who promote health services at the community level at the grassroots level acting as a bridge between the health care system and the community (Mane and Khandekar, 2014).

PCOS is a hormonal disorder causing enlarged ovaries with small cysts on the outer edges of the female reproductive organ. Women often are exposed to irregular or prolonged menstrual cycles affecting their health to a greater level (Seker et.al., 2020). This can be due to high levels of male hormones preventing ovaries from producing and releasing regular eggs as the numerous small collections of fluid (follicles) block the process. The awareness of this medical disorder is higher among the Western counterparts (Chandra-Mouli and Patel, 2020).

The situation is not the same among the developing and under-developed, especially the Asian countries (Adams et.al., 2021) due to the scarcity of financial resources and the availability of skilled surgeons to perform the procedures. Most of the women in India are affected by polycystic ovarian syndrome (PCOS) conduction especially among youngsters and middle-aged women. This has a serious health impact if non-monitored in time (Karjee et.al, 2023).

There are four types of PCOS namely Insulin-resistant PCOS, Inflammatory PCOS, Hidden-cause PCOS, and Pill-induced PCOS (Rahman et.al., 2021). Many times, smoking, excess sugar intake, pollution, and Tran's fat result in this disease among young girls (Pradhan et.al., 2023). Some of the common symptoms experienced by women with this disorder include weight gain, acne, irregular periods, hair loss, unwanted body hair growth, and difficulty in falling pregnant (Advincula & Song,2009). Higher levels of circulating insulin (Caruso et.al., 2020) increase the production of androgens in women intervene with ovulation, and lead to other symptoms. Some oral contraceptives contain high androgen leads to temporary hormonal imbalances which result as pill induces type (Chauhan et.al., 2021). High-level inflammation stemming from an overactive immune system can stimulate the ovaries to produce androgen hormones leading to an irregular menstruation cycle. Intense stress, the body reacting abnormally which forces adrenal glands to produce high androgen leads to the Adrenal type of PCOS (Lauterbach, et.al, 2017).

The authors have examined the demographic profile, work profile, knowledge level, roles & responsibilities of ASHA workers in the process of delivering health care services to the rural population (Sultana et.al., 2019). The results reflected Services like enhancing ASHA's role in promoting and preventing health care, particularly with regard to age at marriage, nutrition, home-based care, and spacing between the births of the first and second children were prioritized (Panda et.al., 2019). ASHA employees are crucial to the rural Indian health sector since they monitor the villagers' health issues and offer assistance and solutions. Government assists these ASHA workers by offering various incentives (Silva et.al., 2020) to make up for the selfless job they do since the pay is low because the labour is voluntary. They carry out duties like promoting good hygiene and sanitation practices (Michael et.al., 2020), prompt patient referrals to medical facilities, monitoring, and playing a significant role in the supervision of nutrition and health programs at the community level, reporting of crucial events, and encouraging women to access healthcare (Paul and Pandey, 2020).

There is a clear disparity in the availability and quality of healthcare services between urban and rural communities in emerging nations like India. The information sources that rural women look to for their health-related information needs (Savari et.al., 2020), as well as their familiarity with health support services and the obstacles to getting access to it, are of serious concern among the rural community (Aryan S, 2022). Rural community healthcare providers are frequently chosen from among the local population, so it is expected of them to have a thorough awareness of the problems and requirements specific to the area. ASHA workers facilitate empowering rural women in education (Rao & Shokeen, 2022). A gynaecological endocrine condition that primarily affects adolescent girls, the polycystic ovarian syndrome affects females of reproductive age. Due to hyperandrogenemia, which causes oligovulation/anovulation, females with PCOS may experience (Slekiene et.al., 2022) issues

including irregular menstruation, obesity, acne, hirsutism, and hyperinsulinemia, among other things where preventable lifestyle disorder is PCOS (Uttam N, 2023). Although the prevalence of PCOS is rising quickly, adolescent girls lack awareness of the condition and their knowledge of its implications. As a result, this study focuses on assessing PCOS knowledge and offers a program to help identify high-risk people (Krithika et.al., 2019).

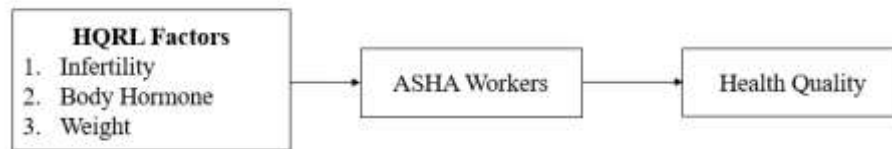


Figure 1. Proposed Research Model.

A multidimensional concept, health-related quality of life (HRQL) comprises aspects relating to physical, mental, emotional, and social functioning. Several socioeconomic factors, including educational attainment, influence how these domains develop. Knowledge, attitudes, behaviors, and abilities that might affect one's health and wellness are all learned through education (Cohrdes and Mauz, 2020). The current research study is focused on the impact of ASHA workers in creating awareness of PCOD/PCOS among rural women and adolescents facilitating in improving the health-related quality of life.

3.0. Materials & Methods

The research study is deductive and descriptive and restricted to the geographical boundaries of North-West rural districts of Tamil Nadu comprising of Dharmapuri, Krishnagiri, Salem, and Tiruvannamalai. A population comprises of the young adolescents and women from these districts. The survey method was deployed through a Self-administered and structured questionnaire through an Accredited Social Health Activist (ASHA) to collect the primary information from the respondents, rural women. These workers are closely associated with women as they act as health activists in the community who create awareness of health and its social determinants (Kumbeni et.al., 2021). Multi-Stage Cluster Sampling method shall be adopted to arrive at a sample size of 605 respondents who were categorized based on their age groups, and marital status. The research instrument is grouped into two major categories, the first component includes a demographic profile of the respondents, and the second component of the instrument includes construct items based on a five-point Likert scale related to Body Hormone, Weight, Infertility, ASHA workers, and Health Quality where each unit is the woman respondent considered in the study. The demographic variables considered for the study involves age, and marital status which are measured as nominal. The invention of ASHA workers towards HRQL shall be measured through an adapted item scale (Cronin et.al., 1998). STATA and JASP v.17 software were used to validate the hypothesis by applying Simple Percentage Analysis and Structural Equation Modeling.

4.0. Results

Reliability analysis was performed on the variables comprising 20 items. The Cronbach's alpha reflected the questionnaire with acceptable reliability ($N = 480$, $\alpha = 0.818 > 0.70$, Drost EA, 2011). All the items appeared to be

worthy of retention, confirming the items' high and excellent ($\alpha \geq 0.9$) reliability. A simple percentage analysis was conducted to examine the demographic profile of the respondents. 84 percent of the respondents were female and were within the age group between 16 – 25 years the and rest were above the age group of 26 years. 60 percent of the rural women population were married and the rest were unmarried. 30 percent of the respondents had kids within the age group of 5 years and the rest had either older kids or no kids.

JASP was used to perform the Structural Equation Modelling through Measurement model and Structural model examination. The goodness-of-fit indices (GFI = 0.987, IFI = 0.912, NFI = 0.976, CFI = 0.912 > 0.90, Hair et.al., 2010). Standardized Root Mean Square Residual (SRMR = 0.066), and Root Mean Square Error of Approximation (RMSEA = 0.067) were less than 0.08, Byrne (2010) proposed a good model fit of Confirmatory Factor Analysis as summarized in Table 1.

Table 1. Confirmatory Factor Model Summary.

Construct	Loadings	Cronbach α	CR	AVE	MSV
Weight					
WE1	0.770	0.862	0.803	0.613	0.410
WE2	0.770				
WE3	0.810				
WE4	0.780				
Asha Workers					
AS1	0.740	0.848			0.380
AS2	0.790				
AS3	0.770		0.770	0.589	
AS4	0.770				
Body Hormone					
BH1	0.670	0.839	0.773	0.587	0.354
BH2	0.800				
BH3	0.860				
BH4	0.720				
Infertility					
IN1	0.740	0.802	0.773	0.587	0.301
IN2	0.720				
IN3	0.670				
IN4	0.710				
Health Quality					
HQ1	0.680	0.872	0.673	0.505	0.436
HQ2	0.691				
HQ3	0.860				
HQ4	0.620				
Source: Authors' Compilation					

The concept validity, convergent validity, and discriminant validity were then tested using the Average Variance Extract (AVE) and Maximum Shared Variance (MSV) procedures, as described by Fornell and Larcker (1981) and

Hair et al. (2010). Cronbach's alpha and Composite dependability were also used to evaluate construct dependability. Table 2 reflects the discriminant validity using the Fornell-Larcker Criterion of the various constructs in the model comprising Weight (WEF), ASHA (ASF), Body Hormone (BHF), Infertility (INF), and Health Quality (HQF) during the confirmatory Factor Analysis.

Table 2. Discriminant Validity – Fornell Larker Criterion.

Constructs	ASF	WEF	BHF	INF	HQF
ASF	0.783				
WEF	0.248	0.768			
BHF	0.448	0.289	0.766		
INF	0.156	0.027	0.215	0.710	
HQF	0.280	0.187	0.222	0.041	0.718

Source: Authors' Compilation

The additional step of validating discriminant validity was examined through the Hetrotrait-Monotrait (HTMT) Criterion as described in Table 3 of the measurement model.

Table 3. Discriminant Validity – HTMT Criterion.

Constructs	ASF	WEF	BHF	INF	HQF
ASF	-				
WEF	0.286	-			
BHF	0.520	0.333	-		
INF	0.180	0.040	0.256	-	
HQF	0.444	0.383	0.181	0.113	-

Source: Authors' Compilation

Diagonal elements are the square root of variance shared between the constructs and their measures which reflects to be less than the corresponding AVE of the constructs. Off-diagonal elements are the correlations among constructs. The discriminant validity was achieved as the AVE is greater than the Maximum Shared Variance (MSV). However, AVE is greater than 0.50 and less than CR. Harman's single factor test which resulted with 25.73 percent of the cumulative variance less than recommendation of 50% by Alvi. I. (2021), confirming the absence of CMB in the current study.

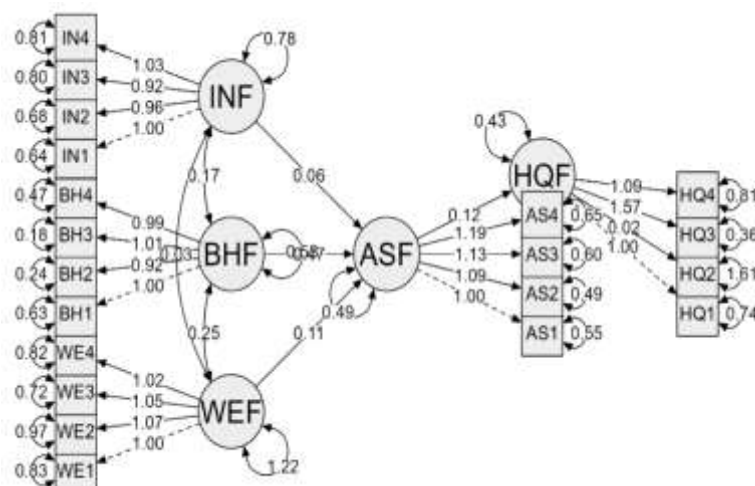


Figure 2. Path Diagram of Model.

The findings of a common factor analysis (CFA) and structural equation modeling (SEM) using the maximum likelihood (ML) approach are presented via covariance-based structural equation modeling (CB-SEM). It is a broad range of techniques that are employed by scientists conducting both observational and experimental research. Structural equation modeling relies on several key premises, including multivariate normality, the absence of systematic missing data, a big enough sample size, and accurate model specification (Dash and Paul, 2021). The SEM path relationships of the model are illustrated in Figure 3.

5.0. Discussion and Conclusion

The conceptual model in this study emphasizes the mediation effect of ASHA workers among the female population situated in the northwest rural districts of Tamil Nadu comprising of Dharmapuri, Krishnagiri, Salem, and Tiruvannamalai. The current study attempted to examine the influence of these workers in creating awareness of the PCOS or PCOD complications that affect the health-related Quality of life among the rural female population. The research argued that these workers play a crucial role in enhancing a healthy life based on the key factors of Infertility, Body Hormone, and Weight which are directly connected to PCOD/PCOS symptoms and menstrual disorder. The findings are in sync with the previous literature contribution that confirms the significant role of ASHA workers in the improvement of health (Paul and Pandey, 2020). The path relationships between the constructs are illustrated in Table 4.

Table 4. Structural Model Summary

Path Relationship	Beta (β)	z-Value	p	Results
WEF $\rightarrow$ ASF	0.114	2.978	0.003	Supported
BHF $\rightarrow$ ASF	0.475	7.002	< 0.001	Supported
INF $\rightarrow$ ASF	0.065	1.351	0.177	Not Supported
ASF $\rightarrow$ HQF	0.122	2.677	0.007	Supported
Fit Indices: $\chi^2/df = 2.213$; NFI = 0.917; GFI = 0.990; TLI = 0.944; CFI = 0.952; RMSEA = 0.050, SRMR = 0.050. Source: Authors' Compilation				

The analysis describes that there is the positive impact of weight ($\beta = 0.114$, $z = 2.978$, $p < 0.001$) on Health Quality, supporting the H1. There is positive impact of infertility ($\beta = 0.121$, $z = 1.351$, $p < 0.001$) on Health Quality, supporting H2. There is positive impact of body hormone ($\beta = 0.283$, $z = 7.002$, $p < 0.001$) on Health Quality, supporting the H3. There is positive impact of weight ($\beta = 0.006$, $z = 2.621$, $p < 0.05$) on Health Quality. There is a positive on infertility ($\beta = 0.587$, $z = 3.025$, $p < 0.05$) on Health Quality when intervened by ASHA workers. There is a positive on body hormone ($\beta = 0.116$, $z = 3.870$, $p < 0.001$) on Health Quality when intervened by ASHA workers.

5.1. Implications of Study

The practical implications of this study will encourage government to take measures to educate and create awareness programs about various diseases, problems related to reproductive organs of women. The ASHA workers enable in increasing access to health care services, promote health education, facilitate in boosting

immune system, engagement in community, reduce stigma barriers, encourage usage of contraceptive methods, consumption of balanced and healthy diet to reduce PCOD and PCOS concerns among the female population in rural areas.

5.2. Limitations and Future Directions

The current study is no exception with limitations as the age group was specifically chosen, the non-consideration of other southern states in India.

The future direction of this study may be considered in detailed research as listed below;

- (a) Study in the application of robotic surgery in treating gynecology diseases.
- (b) Comparative study between various states within the country.
- (c) Cross-sectional study across Asian countries on the mental well-being and hormonal imbalance.
- (d) Studies relating to government policies and schemes initiated to supported underprivileged rural women.

Declarations

Source of Funding

This study received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Competing Interests Statement

The authors have declared that no competing financial, professional, or personal interests exist.

Consent for publication

All the authors contributed to the manuscript and consented to the publication of this research work.

Authors' contributions

All the authors took part in literature review, analysis, and manuscript writing equally.

Availability of data and materials

Supplementary information is available from the authors upon reasonable request.

Institutional Review Board Statement

Not applicable for this study.

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