



Original Research

## Prevalence and Predictors for use of Herbal medicine in the treatment of Infertility in a secondary Health facility in South-South Nigeria.

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### Abstract

**Background:** Infertility is one of the major medical problems seen in the Gynaecology clinic. Herbal medicine (HM) has become one of the treatment options used to circumvent infertility problems. This study aims to explore the prevalence and predictors for HM use in the management of infertility in our region.

**Methodology:** The method used was a cross-sectional study of 117 women attending the infertility clinic at Central Hospital Agbor, Delta State, Nigeria. The interviewer administered a questionnaire comprised of socio-demographic characteristics, infertility-related aspects, and information on herbal medicine usage. The main outcome measure was the Prevalence of HM use for infertility treatment and the possible predictors. Analysis was done using SPSS version 22.

**Results:** The mean age of participants was 34.1 with a standard deviation of 6.66 years. The minimum age of participants was 23 years while the maximum age was 48 years. The prevalence of HM use was 79.9%. The factors that were significantly associated with the use of HM were marital status (p 0.033), history of primary infertility (0.026) and having used HM for the management of other ailments (0.000). Women who were married and having fertility issues were more likely to seek alternative methods like the use of HM.

**Conclusion:** The prevalence of use of HM among participants attending the fertility clinic was high at 79.9%. We recommend that health professionals should enquire about the use of HM as this may help in educating the patients about the health risks of using HM. There is a need to explore the potential benefits and risks of HM use.

**Key words:** Prevalence; Predictors; Herbal Medicine; Infertility; South-South Nigeria.

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## **Introduction:**

The World Health Organization (WHO) defines infertility as the “failure to conceive after 12 months of regular unprotected sexual intercourse in the absence of known reproductive pathology”.<sup>[1]</sup> Infertility is a public health problem especially in middle and low resource countries but continues to receive little attention.<sup>[2]</sup> Globally, in the past two decades, the absolute number of couples affected by infertility has increased from 42.0 million in 1990 to 48.5 million in 2010.<sup>[3]</sup> In developing countries, where child-bearing is greatly valued, infertile couples are faced with problems ranging from overt ostracism or divorce to more subtle forms of social stigma leading to isolation and mental distress.<sup>[4,5,6,7]</sup> Infertility affects over 10 % of the world population, and 30 % of the population in Sub-Saharan Africa.<sup>[8,9]</sup>

The treatment of infertility involves the use of different methods. Traditionally, the conventional treatment of infertility involves the use of ovulation inducing agents like Clomifene citrate, Letrozole, Tamoxifen or the Gonadotrophin analogues to stimulate ovulation. However, in patients with bilateral tubal blockage, severe endometriosis, severe pelvic adhesions and severe male factor, conventional treatment method may not be effective. Generally, the success rate of treatment using the conventional method is low. In a 2018 Cochrane review of 13 randomised controlled trials comparing clomiphene vs letrozole in the management of patients with polycystic ovary disease syndrome, only 31.4 % and 21.4% respectively achieved pregnancy.<sup>[10]</sup> Assisted reproductive technique is a more advanced method that is used to overcome some of the causes of infertility that are not amenable to conventional treatments. It involves ovarian stimulation, egg collection, fertilization and embryo transfer using advanced techniques. However, this service is not readily available, it is expensive, and the success rate is put at about 33% depending on many factors like patient characteristics and centre involved.<sup>[11,12]</sup>

Pressure from in-laws and the society to conceive and the advancing maternal age with associated reduction in fertility rate<sup>[13]</sup> together with difficulty in assessing conventional medical therapies and assisted reproductive technology (ART) may influence a woman’s decision to seek alternative health approaches such as HM.<sup>[14,15,16]</sup>

HM is the prevalent form of traditional and complementary medicine use in Sub-Saharan Africa.<sup>[17-19]</sup> Some studies estimated the prevalence of HM for infertility treatment among women in Africa at 76.2% while that of Nigeria was put at 81.6%.<sup>[21,21]</sup> Reasons for its popularity is attributed to its low cost, accessibility, alignment with patient’s cultural and religious values, and perceived efficacy and safety as well as dissatisfaction with conventional healthcare.<sup>[22-27]</sup> However, despite the popularity of traditional and complementary medicine, evidence of its efficacy and safety still remains to be determined. Secondary and tertiary health facilities especially in the developing countries are burdened with the management of life-threatening conditions like infectious diseases and the battle to reduce the high infant and maternal morbidity and mortality, as such the treatment need of patients with infertility are not given the optimal attention. Considering these challenges, infertile patients tend to resort to traditional healers earlier in their quest to overcome the challenges. Anecdotal findings in our clinic shows that a large proportion of our patient in Gynaecology clinic seeking fertility care have at one time or the other used HM for treatment of their fertility problem. There is paucity of data regarding HM use for the treatment of infertility in our environment. It is against this background that this study was conducted to determine the prevalence and factors associated with HM use among women seeking care for infertility at the Central hospital Agbor.

## **Materials and Methods**

This was a prospective study involving women who presented for fertility treatment at Central Hospital, Agbor, Delta state, Nigeria from January 2023 to December 2023. Approval for the study was obtained from the Institutions Ethics Committee with Protocol No.: E. Comm/C/0/AMZ/190/22. Central Hospital,

Agbor, is a 250-bedded hospital in the South-South region of Nigeria. The hospital has a monthly antenatal booking of two hundred women, and the delivery rate in the past 5 years has been approximately 2000/year, with a CS rate of about 28%. The Obstetrics and Gynaecology department has two consultants who are fellows of the National postgraduate medical college and the West African college of surgeons.

All women presenting for fertility management who consented were eligible to join the study.

The Sample size was determined using the formula for sample size calculation for cross-sectional study;  $n = z^2pq/d^2$ , where n is required minimum sample size, z is value of test statistics (1.96), q is probability of those not using herbs, that is, (1-p), d is degree of accuracy or standard error (0.05) at 95% confidence interval, and p is estimated proportion of use of HM among women seeking fertility care. We assumed p = 95.4% based on a similar study conducted in Abakiliki, Nigeria.<sup>[28]</sup> The calculated sample size was 67 participants. However, 117 patients who presented within the study period and consented were recruited to increase the external validity of the study.

The instrument for data collection was a structured questionnaire developed from previous study by Nwose et al<sup>[28]</sup> with some modifications. The questionnaire was pretested two weeks before the actual study among 15 women who came for infertility treatment at the gynaecology unit of the hospital. The sociodemographic characteristics, history of infertility and previous history of the use of HM for the treatment of infertility prior to their visit to the gynaecology clinic were documented. The participants were considered to have used HM for treatment if she had drunk it, swallowed it, inhaled it, inserted or applied such substance to any part of her body.

The questionnaire was administered in the form of an interview by a trained clinic staff. The clinic staff tick the corresponding answer on the questionnaire the respondent's answered. This method helped to ensure correct answers were entered and it also helped to reduce attrition rate.

The data generated were analyzed using the IBM Statistical Package for Social Science (SPSS) version 20. Descriptive statistical methods were used to summarise data on socio-demographic characteristics using mean, range, and percentages/proportions and presented as tables. A comparison of participants' use of HM for treatment of fertility across socio-demographic and fertility profiles were performed using Pearson's Chi-Square. Statistical significance was set at p=0.05.

### Results:

Among the participants, 90 (79.9 %) used HM for their fertility management (See Figure 1).

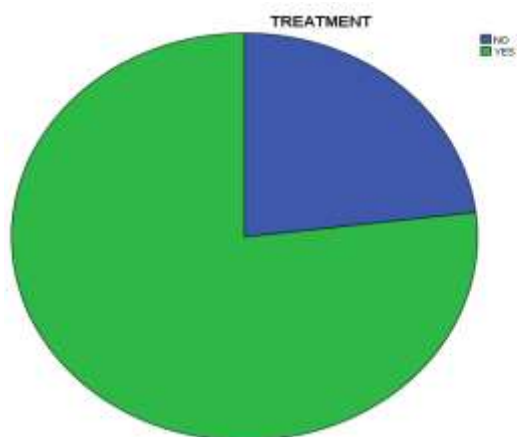


Fig 1: Pie chart on use of HM among Participants

**Table 1. Sociodemographic characteristics of respondents**

| <b>Age</b>              | <b>Frequency (117)</b> | <b>Percentage</b> |
|-------------------------|------------------------|-------------------|
| 20 -25                  | 11                     | 9.4               |
| 26 -30                  | 34                     | 29.1              |
| 31-35                   | 23                     | 19.7              |
| >36                     | 49                     | 41.9              |
| <b>Marital status</b>   |                        |                   |
| Never Married           | 2                      | 1.7               |
| Married                 | 108                    | 92.3              |
| Divorced                | 6                      | 5.1               |
| Widow                   | 1                      | 0.9               |
| <b>Education status</b> |                        |                   |
| Primary                 | 5                      | 4.3               |
| Secondary               | 61                     | 52.1              |
| Tertiary                | 51                     | 43.6              |
| <b>Religion</b>         |                        |                   |
| Catholic                | 15                     | 12.8              |
| Pentecostal             | 88                     | 75.2              |
| Islam                   | 3                      | 2.6               |
| Traditional             | 1                      | 0.9               |
| Anglican                | 5                      | 4.3               |
| Others                  | 5                      | 4.3               |
| <b>Parity</b>           |                        |                   |
| Nullipara               | 62                     | 53.0              |
| Multipara               | 55                     | 47.0              |
| <b>Occupation</b>       |                        |                   |
| Housewife               | 5                      | 4.3               |
| Artisan                 | 22                     | 18.8              |
| Bankers                 | 2                      | 1.7               |
| Business                | 68                     | 58.1              |
| Civic Servant           | 4                      | 3.4               |
| Farmer                  | 4                      | 3.4               |
| Nurse                   | 1                      | 0.9               |
| NYSC                    | 1                      | 0.9               |
| Pastor                  | 1                      | 0.9               |
| Teacher                 | 9                      | 7.7               |

**Marriage type**

|             |     |      |
|-------------|-----|------|
| Monogamy    | 104 | 88.9 |
| Polygamy    | 4   | 3.4  |
| Not married | 9   | 7.7  |

**Marital history**

|                          |     |      |
|--------------------------|-----|------|
| Not married              | 9   | 7.7  |
| 1 <sup>st</sup> Marriage | 102 | 87.2 |
| 2 <sup>nd</sup> Marriage | 6   | 5.1  |

The mean age of participants was 34.1years with a standard deviation of 6.66 years. The minimum age was 23years while the oldest participant was 48 years. Majority of the participants 92.3% were married while only 1.7 % unmarried group population. The level of education of participants was high with secondary and tertiary level of education constituting 52.1% and 43.6% respectively (See Table 1).

**Table 2: Fertility history of Respondents**

|                                       |          |      |
|---------------------------------------|----------|------|
| <b>Have you been pregnant before?</b> | No (117) | %    |
| Yes                                   | 91       | 77.8 |
| No                                    | 26       | 22.2 |
| <b>If yes</b>                         |          |      |
| Before marriage                       | 41       | 35.0 |
| Marriage                              | 50       | 42.7 |
| <b>Duration of infertility</b>        |          |      |
| <2 years                              | 62       | 53.0 |
| 3-5 years                             | 28       | 23.9 |
| >5years                               | 27       | 23.1 |
| <b>Use of TM for other illness</b>    |          |      |
| Yes                                   | 64       | 54.7 |
| No                                    | 47       | 40.2 |
| No response                           | 6        | 5.1  |
| <b>Use of HM for infertility</b>      |          |      |
| Yes                                   | 90       | 76.9 |
| No                                    | 27       | 23.1 |
| <b>If yes time</b>                    |          |      |
| Before Orthodox                       | 80       | 68.4 |
| During orthodox                       | 10       | 8.5  |
| No Response                           | 2        | 21.4 |
| <b>Duration of use</b>                |          |      |
| < 2 years                             | 75       | 65.0 |
| > 3years                              | 15       | 12.8 |

The rates of secondary and primary infertilities were 91 (77.8%) and 26 (22.2%) respectively. Among the previously pregnant respondents, 50 (42.7%) are pregnant with their husbands while 41 (35%) were pregnant before marriage. About 64 (54.7%) has used herbal drugs previously to treat other illnesses like malaria, typhoid and joint pains (See Table 2).

**Table 3: Use of HM versus sociodemographic characteristics**

|                       | Used (90) | Not used (27) | P-value |
|-----------------------|-----------|---------------|---------|
| <b>Age</b>            |           |               |         |
| 20-25                 | 8         | 3             | 0.639   |
| 26-30                 | 25        | 9             |         |
| 31-35                 | 20        | 3             |         |
| ≥36                   | 37        | 12            |         |
| <b>Marital status</b> |           |               |         |
| Never married         | 0         | 2             | 0.033   |
| Married               | 83        | 25            |         |
| Divorced              | 6         | 0             |         |
| Widow                 | 1         | 0             |         |
| <b>Education</b>      |           |               |         |
| Primary               | 4         | 1             | 0.860   |
| Secondary             | 48        | 13            |         |
| Tertiary              | 38        | 13            |         |
| <b>Religion</b>       |           |               |         |
| Catholic              | 11        | 4             | 0.925   |
| Pentecostal           | 67        | 21            |         |
| Islam                 | 3         | 0             |         |
| Traditional           | 1         | 0             |         |
| Anglican              | 4         | 1             |         |
| Others                | 4         | 1             |         |
| <b>Occupation</b>     |           |               |         |
| Artisans              | 15        | 7             | 0.659   |
| Business              | 53        | 15            |         |
| Civil servant         | 3         | 1             |         |
| Farmers               | 4         | 0             |         |
| House managers        | 5         | 0             |         |
| Professionals         | 2         | 1             |         |
| Teachers              | 6         | 3             |         |
| <b>Parity</b>         |           |               |         |
| Nullipara             | 51        | 11            | 0.109   |
| Multipara             | 39        | 16            |         |
| <b>Marriage type</b>  |           |               |         |
| Monogamy              | 81        | 25            | 0.392   |
| Polygamy              | 5         | 0             |         |
| Not married           | 4         | 2             |         |

Socio-demographic characteristic that was significantly associated with the use of herbal drugs was marital status (p-value 0.03). Women who were married were more likely to seek alternative treatment of infertility using herbal drugs (See Table 3).

**Table 4: Use of HM versus fertility histories of participants.**

|                               |          | Used (90) | Non user (27) | P-value |
|-------------------------------|----------|-----------|---------------|---------|
| Pregnant before               | Yes      | 66        | 25            | 0.026   |
|                               | No       | 24        | 2             |         |
| Duration of Infertility       | <2years  | 45        | 12            | 0.297   |
|                               | 3-5years | 21        | 7             |         |
|                               | >5years  | 24        | 3             |         |
| Use of HM Rx of other illness | Yes      | 57        | 7             | 0.000   |
|                               | No       | 27        | 20            |         |

Fertility histories significantly associated with the use of herbal drugs for treatment of infertility included whether patient has been pregnant before (p value 0.03) and use of herbal drugs for treatment of other conditions (p value 0.00) Women were more likely to have used herbal drugs before presenting for orthodox treatment 80 (68.4%) versus 10 (8.50%) (See Table 4).

**Table 5: Source of recommendation/introduction to HM use?**

|                   | Nö | Percentage (%) |
|-------------------|----|----------------|
| Mother            | 28 | 23.9           |
| Friends           | 36 | 30.8           |
| Mother in-law     | 10 | 8.5            |
| Husband           | 3  | 2.6            |
| Radio/news outlet | 3  | 2.6            |
| Internet          | 2  | 1.7            |
| *Others           | 35 | 29.9           |

\* Aunt, sister, sister in-law, brother, neighbours.

**Discussion:**

From the study, the use of HM for the treatment of infertility among women presenting at fertility clinic was high (90; 79.9%). The finding is like previous studies in Ethiopia, Uganda and Nigeria that reported 80%,76.2% and 69% respectively for use of HM among women seeking fertility treatment in the gynaecology clinic. [29,30,31] The prevalence of use of HM in this study was lower than the 95.4% reported by Nwosu et al. [28] The factors that were significantly associated with the use of HM were marital status (p 0.033), history of primary infertility (0.026) and having use HM for the management of other ailments (0.000). Women who were married and having fertility issues were more likely to seek for alternative methods like the use of HM. The finding is in agreement with the finding by Nwosu et al. [28] One of the

primary reasons for marriage is to bear children, therefore, any delay is seen as sign of failure of womanhood. The consequence is undue pressure from mothers, mother in-laws and friends of the patient to seek solution to the infertility problem with HM as a readily available option due to its availability and relatively low cost. Therefore, family members and friends act as major influencers regarding where to seek fertility treatment by the infertile woman. Women who have never been pregnant before were also more likely to engage in the use of HM for the treatment of infertility. Anecdotal evidence shows that even among unmarried women, those that are having unprotected intercourse and have never been pregnant before regarding it as a potential problem that can affect their marital life. The tendency is to engage in use of HM for fertility treatment even before marriage. Patients who have been using HM for treatment of other ailments already believe in the potential benefits of HM, therefore, it is not surprising to observe the high correlation between use of HM for other ailments and treatment of infertility. There was no significant relationship between education status and the use of HM in this study. The finding is similar to the report by Smith et al in the United States.<sup>[32]</sup> The relationship between educational status and the use of HM among infertile women has been inconsistent. Nwose et al.<sup>[28]</sup> and Ghanzeri et al.<sup>[33]</sup> reported that HM users were more likely to be less educated while similar studies in Uganda<sup>[30]</sup> and the UK<sup>[34]</sup> stated that the less educated women were less likely to use HM. The literacy level in our study population was high with secondary and tertiary level of education making 95.7% of the study population. It was therefore difficult to draw a conclusion on the effect of education from this study. Studies from more rural communities where all strata of educational status will be represented may present a better representation of the effect of education on HM use for fertility management. There was no significant difference in the use of HM among the various age groups. This is likely to be because HM is readily available at relatively low cost, therefore, most infertile women due to pressure from family members and friends resort to it as first line treatment. This was reflected in this study as 68.4% of the participants were already using HM before presentation in the fertility clinic. Religion, occupation and type of marriage did not significantly affect the use of HM for fertility treatment. The overriding factor and influence of HM use may be the need to achieve results within the shortest possible time. Mothers and friends were the major influencer of the infertile women to use HM for fertility treatment in this study. The stigmatization associated with infertility are more from friends and relations especially from the husband family. In some instances, the problem of infertility is seen as the woman problem and often viewed as a reflection of poor upbringing and previous promiscuity. It is not surprising to see mothers and friends acting as major influencers of the infertile woman use of HM.

A large proportion of the respondents (53.0%) in the study presented early (within two years) of experiencing fertility problem. This reflects the premium placed on childbearing immediately after marriage. Expectations from friends and relations for early conceptions are high, as such, any delay is an opportunity to explore the potential benefit of alternative medicines. Only 23.1% of respondents presented after 5 years of infertility problem and after use of HM for management without success.

The use of HM among infertile couples worldwide and in Africa is high. The World Health Organization (WHO) estimates that use of herbal medicines on the African continent is widespread and prevalent.<sup>[35]</sup> It is likely that the attraction to use HM may have some cultural influences as the use was high across all sociodemographic attributes. Despite the widespread use of HM for infertility management, awareness of the potential benefits and hazard appears limited. The possibility of potential harmful effect of HM on fertility has been reported.<sup>[36,37,38]</sup> Evidence shows that the phytoestrogens in some HM may exert some negative estrogenic effect which may affect implantation and as such have negative effect on pregnancy outcome.<sup>[37,38]</sup> Concurrent use of HM and modern medical treatment for infertility has been shown to decrease pregnancy and live birth rates.<sup>[39]</sup> Most of the infertile who use HM for fertility management are not aware of this possible harmful effect. It is therefore important that those who manage infertility should take proper history especially as it concerns use of HM and the possible side effects of those medications explained to the patients.

This study has explored the use of HM among infertile women in our locality establishing a prevalence rate of 79.9% use in our setting. However, since this study was carried out in a health facility, it may not



reflect the true prevalence of HM use in our region. The possibility of non-disclosure due to the presumed judgmental attitude of health workers cannot be ruled out. They could also be the problem of recall bias among the respondents

### **Conclusion:**

The use of HM for fertility management in our region is high (90;79.9%). Factors that were significantly associated with use of HM were, being married and having fertility problem, previous use of HM for the treatment of other illnesses and not having been pregnant before. Despite the documented evidence of the possible harmful effect of HM use, the use HM among infertile women remain high.

We recommend that fertility managers enquire routinely about the use of HM and possibly identify the commonly used HM. It will help in exploring the potential risks and benefits of such medications and consequently assist the fertility managers in counseling the patients.

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