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community survey on the prevalence of infertility is called for. It is for this reason that this study was conducted.

Materials and methods

This study was undertaken in a rural village (Shao) of Kwara State, Nigeria. Shao is a community dominated by farmers and most ethnic groups in the country are represented, with 80% of the inhabitants being Yorubas. At the time of this study, in 1985, only two health centres and three patent medicine stores were operating in the village. The population of the village was 7266 with 517 houses, and there were 3510 (48.3%) males and 3756 (51.7%) females. Females of child-bearing age (15–49 years) accounted for 1926 (26.5%) of the population. Using systematic random sampling, every other house was selected and all the females of reproductive age living in the selected houses were interviewed by the investigators and research assistants.

Recruited interviewers were trained to administer a modified questionnaire developed by World Health Organization (W.H.O.) Expert Committee on infertility [4]. The restructuring of the questionnaire was designed for community evaluation of infertility which reflects socio-cultural characteristics of the respondents.

Based on our resources, one out of every two women of reproductive age was interviewed using a systematic random sampling technique. For the purpose of this survey infertility is defined as inability to achieve pregnancy after 18 months of regular coitus. Out of the 813 women visited, 749 responded to the questionnaire.

The variables examined include the number of infertile women, the type of infertility, the perceived causes of the infertility, pregnancy status, age, parity, educational level and outcome of last pregnancy.

Results

Out of 758 women visited, response was obtained in 749 (98.8%) of them; 98 had never been pregnant before, while 651 women had a previous pregnancy. Two hundred and twenty-seven of the respondents had infertility, giving a prevalence rate of 30.3%. The age distribution of the infertile women revealed that over 50% were over 25 years of age (Table 2). Sixty-nine of them suffered from primary infertility, giving indices of primary infertility of 9.2% and secondary infertility of 21.1%. Still-birth and recurrent abortions were seen in 6.9% of the women, and 700 (95.6%) out of the 749 women interviewed were married. History of previous sexually transmitted diseases was obtained in 147 (19.6%) of the total women interviewed, but only 52 (22.9%) of the 227 who were infertile had history of previous venereal diseases (Table 2).

Six hundred and twenty-five (34.4%) of the population interviewed had at least one living child and the mean parity for the group was 3.2 (Table 3); 456 (60.9%) out of 758 had no formal

Table 1. Age distribution and type of infertility

Age (years)	No. of women interviewed	(%)	No. of infertility cases	(%)	Type of infertility: Primary No. of cases	(%)	Secondary No. of cases	(%)
15–19	53	(7)	2	(1)	2	(1)	—	—
20–24	163	(14)	22	(10)	9	(4)	13	(6)
25–29	146	(10)	37	(16)	16	(7)	21	(9)
30–34	203	(30)	81	(36)	24	(12)	57	(24)
35–39	47	(16)	20	(9)	3	(1)	17	(8)
40–44	111	(15)	57	(25)	14	(6)	43	(19)
45–49	26	(3.5)	8	(4)	1	(0.5)	7	(3.5)
Total	749		227	(30)	69	(9)	158	(21)

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The prevalence of infertility in a rural Nigerian community

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Summary

The prevalence of infertility in a rural Nigerian community is determined by a systematic random sampling of the population. The overall prevalent rate was 30.3%, giving indices of 9.2% for primary infertility and 21.1% for secondary infertility. Primary infertility is rare after the age of 30 years and acquired causes of infertility are responsible for the high prevalence rate. Genital infections (post-abortal and puerperal) are major contributory factors to the high rate of infertility. Liberal abortion laws, improved socio-economic status and elimination of harmful socio-cultural beliefs and practices would reduce the problem of infertility to the barest minimum in the developing countries.

Résumé

Nous nous sommes penches sur la prevalence de la sterilité dans une communaute rurale nigeriane, par un echantillonnage fortuit mais systematique de la population.

Des indices de 9.2% et de 21.1% pour la sterilité primaire et secondaire respectivement ont été notées voire un taux total de prevalence equivalant 30.3%. Nous avons etabli que des causes à caractere 'acquis' — infections genitales post-avortement et post-accouchement — ont beaucoup contribue au taux élevé de l'infertilité or, la sterilité primaire est rare au dela de l'âge de 30 ans.

La liberalisation des lois reglant l'interruption de grassesse, l'amelioration de la situation socio-economique des sujets et l'elimination des croyances et comportements socio-culturaux qui nuissent à la femme reduiraient, au minimum possible le probleme de la sterilité dons les pays en voie de developpement.

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Introduction

The prevalence of infertility varies in each community and appears high in certain countries of sub-Saharan African [1–3]. In some regions, like Gabon, Cameroon, East and Central African Republic, many women complete their reproductive lives without pregnancy and a prevalence rate of about 50% had been recorded [4–5].

In the West African sub-region, there is scarcity of information on the prevalence of infertility in the rural community [6]. However, in most areas of Africa the evidence so far has shown areas of high fertility co-existing with low fertility in many countries with large rural settlements. Unfortunately the factors responsible for the low levels of fertility do not seem to be well-defined and, indeed, no general remedial actions have been recommended to rectify this problem [7].

Furthermore, the estimate of the magnitude of the infertility problem is often inaccurate, especially so in the developing countries where most studies are hospital-based. Therefore, in order to obtain more accurate data on the prevalence of infertility, a community-based survey of the population is required.

The literature on such a community survey, particularly for rural areas of the developing countries, are scanty, and the information available is often incomplete and difficult to interpret [8–15]. Therefore a systematic rural

with mass illiteracy are probably responsible for the apparent high rate of infection associated infertility in most rural areas of the developing countries [27,34].

The socio-cultural factors such as premarital sexual promiscuity which may contribute to infertility do not appear to influence significantly the high level of infertility seen in this community. This is probably because women must be consummated in this community as a sign of family respect and faithfulness. However, unhygienic practice in pregnancy, labour and puerperium, in addition to harmful cultural practice such as female circumcision, are predisposing factors to developing genital infections and subsequent infertility [24].

Despite the fact that lactational amenorrhoea is occasionally attributed to infertility problem in this community, because of some observations of earlier onset of menstruation before the end of their 2 years of the breast feeding period, there is no sufficient evidence in support of abnormal hormonal functions as a cause of infertility in these women. This observation is worthy of note, as abnormal endocrine function still accounts for a small percentage of infertility cases in the developing countries [30]. Cultural beliefs of evil spirits as a cause of infertility are strong among members of this community. However, there is no scientific evidence for this observation.

On the whole, this survey revealed that infertility is still a major public health problem, which has far-reaching consequences in the rural communities of the developing nations. Hence, programmes to prevent infertility must include measures to control venereal disease through health education. Hygienic delivery practice must be widely introduced and accepted, to reduce the risk of puerperal sepsis in the rural communities. Also, since previous abortions seem to contribute to the infertile status of these women, and in view of the high rate of criminal abortion in Nigeria, there is need to encourage liberal abortion policies which will improve the outcome of induced abortions. In addition, an improved social status, through gainful employment and large-scale farming in the community which can ensure self-sufficiency, will go a long way to reduce factors contributing to high prevalence of infertility in rural communities of the developing countries.

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Table 2. Characteristic features seen in infertility in the community

Features of the infertility cases	No. of cases	%
Duration of infertility (years)		
1.5	47	21
1.5–2.5	99	44
2.5–2.5	46	20
4.5–8.00	33	15
8.0	22	1
Previous history		
STD in the total population interviewed	147	19.6
Pregnancy complications in the total population interviewed	69	9
History of STD among infertile women	52	22.9
History of pregnancy complication in infertile women	37	16

STD = sexual transmitted disease.

Table 3. Parity distribution in the infertility survey

Parity	No. of cases	%	No. of infertile cases	%
0	234	31	69	31
1–4	386	52	112	49
⩾ 5	129	17	46	20
Total	749	—	227	—

education and their main occupation was farming. The majority of the women were living with their husbands. They attributed infertility to certain diseases, and also the culture identifies witchcraft as a cause of infertility. The infertile women obtained care mostly from traditional healers, although a few combined this with orthodox health institutional care.

Discussion

Although infertility usually attracts considerably international attention, its exact extent in most rural communities of the developing countries is unknown [1,5,16]. Also, its pattern and level appear to be closely associated with certain biological and geographical variations [6–9]. However, the prevalence rate of infertility in this study is higher compared with findings previously reported in Nigeria [2].

Some of the findings in this study are similar to reports of other African women studied by the W.H.O. Collaborative group [25,26]. However, in contrast to the W.H.O. Study, conducted in four large African cities — Ibadan, Lusaka, Nairobi and Yaounde, this survey was conducted in a rural community with a large percentage of low socio-economic class. Also, the previous observation of Olusanya [17] that low age at marriage and cohabitation may make the woman concerned worn-out within a short time after marriage, thereby adversely affecting her fertility, is contrary to the findings in this study. In this survey, teenagers suffer less from infertility, and the result of this analysis is similar to the findings of Belsey [5] in Mali and Gabon. Also, the majority of the cases in this study suffer from secondary infertility, which is at variance to Belsey's findings in Sudan [5] but similar to the observations of Chartfield *et al.* [12], Ladipo [27,31–33], and Moutaings [13] from East Africa, Nigeria and Gabon respectively. Primary infertility is uncommon in the women aged over 30 years in this survey, as in Belsey's findings from Thailand [5], indicating that there is a low level of congenital or inherited factors as a cause of infertility in the community.

The general irreducible level of infertility in many parts of the world is regarded to be about 5%, and the observed high rate in this survey is probably attributable to the acquired causes of infertility which may follow pelvic inflammatory diseases, post-partum and post-abortal genital infection, which in some cases may be subclinical [16,17,19,28,29]. In this study, contrary to the report of Collect *et al.* [20], there is an observed correlation between the magnitude of the infertility and the number of previous births, abortions and ectopic pregnancies. The findings in this analysis further support the previous reports that genital infections are major predisposing factors for infertility in the developing countries [25,26,28,32]. Also, the poor socio-economic status of the people in this community, resulting in malnutrition, coupled

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