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Health-related quality of life and its contributory factors in allergic rhinitis patients in Nigeria

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ABSTRACT

Objectives: To determine the health-related quality of life (HRQoL) in allergic rhinitis patients as well as identify contributory factors to patient's well-being.
Methods: Cross-sectional study by multistage sampling. Four-month study duration (October 2013 to January 2014). The setting of the study was Kwara State, Nigeria, which has 16 local government areas with 3 senatorial districts, total land mass of 36,825 km^2 with a population of 2,591,555. 132 consenting adults; 66 of them have allergic rhinitis (AR) using Score for Allergic Rhinitis (SFAR) instrument and 66 were age- and gender-matched controls ($\chi^2 = 0$, d.f. = 1, $P = 1$ and $\chi^2 = 1.24$, d.f. = 2, $P = 0.54$, respectively). Information on HRQoL was obtained using the 14-parameter mini-rhinoconjunctivitis quality of life questionnaire (mini-RQLQ). Socio-demographic variables possibly contributory to patient's well-being were obtained. Kruskal–Wallis and Mann–Whitney *U* tests were used to compare means.
Results: The overall Total Symptom Score (TSS) was 3.37 ± 0.9, while male and female allergic patients and control TSS were 3.61 ± 1.0; 3.16 ± 0.8, and 0.98 ± 0.2; 0.95 ± 0.2, respectively. Effects of gender, marital status, senatorial districts, residential area and duration of symptoms had significant impact on the quality of life. The highest correlation with TSS and components of mini-RQOL questionnaire existed between nasal problems and other symptoms ($r = 0.866$; 0.868).
Conclusion: AR had appreciable impact on HRQoL of the participants. Gender, number of dependents, marital status, senatorial districts, residential area and duration of symptoms were major identifiable contributory factors to the patient's well-being.

1. Introduction

Allergic rhinitis refers to a chronic clinical condition which involves inflammation of the nose and paranasal sinuses. While worldwide prevalence is varied, a recent hospital-based study done in North-Central Nigeria reported 31.6% [1]. Despite the availability of medications to control the disease and thus minimize the morbidity, misdiagnosis and underdiagnosis of the condition still arise, leading to an undermining of the severity of the impact of the disease.

It becomes important therefore to determine the severity of the disease using Patient-reported Treatment Outcomes (PTO), which are based on the perception of the disease by the recipients. This fact has been identified by the World Health Organization (WHO) sponsored document, Allergic Rhinitis and its Impact on Allergy (ARIA) [2]. The single most important aspect is the health-related quality of life (HRQoL). This relates to the overall quality of life, which has been shown to affect healthcare [3]. It refers to a broad concept, which is based on the patient's subjective assessment of the impact of the disease or the treatment being received on account of the disease [4].

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The instruments used to obtain HRQoL information can either be generic or disease-specific in nature [5]. The generic instruments are designed to be used for patients with general health states; thus, comparison is often easier. Such examples include Medical Outcomes Survey Short Form 36 (SF-36) [6], Nottingham Health Profile (NHP) [7]. Despite the advantages, the major drawback of the generic instruments is the inability to measure specific peculiarities inherent in each disease. The other type of instrument is the disease-specific instrument. These are designed to address the deficiencies noted in the generic instruments and thus tend to be more sensitive to changes in patient's symptoms. An example of this is the mini-rhinoconjunctivitis quality of life questionnaire (mini-RQLQ) [8] which is a 14-item instrument that has strong measurement properties and measures the same construct as the original 28-item rhinoconjunctivitis quality of life questionnaire (RQLQ) [9].

Kwara State is located within the North-Central geopolitical zone of Nigeria, one of the six zones in the country. The state has 16 local government areas with 3 senatorial districts, a total land mass of 36,825 km [2] with a population of 2,591,555 [10]. The senatorial districts are namely Kwara Central, Kwara South and Kwara North. Each of the districts has its own individual peculiarities. The most affluent of these is the Kwara Central, where the state capital is located and largest concentration of healthcare facilities are sited.

The study aims at determining the health-related quality of life (HRQoL) in allergic rhinitis patients in our study population and identifies contributory factors to patient's well-being in both rural and urban communities in Kwara State, Nigeria.

2. Materials and methods

2.1. Study design

This was a community-based cross-sectional study carried out in selected local government areas (LGAs) in Kwara State, Nigeria. Ethical approval was sought and obtained from the Ethics committee of the Ministry of Health, Kwara State prior to the commencement of the study. The study was over a 4-month period (October 2013 to January 2014).

The inclusion criteria for the study were: adults >18 years of age who were diagnosed with allergic rhinitis using Score For Allergic Rhinitis (SFAR), a validated instrument for making a diagnosis of allergic rhinitis, based on the study of Annesi-Maesano et al. [11]. This involved the use of parameters such as nature of symptoms, presence of rhinoconjunctivitis, presence of trigger factors, months of the year affected, perceived allergic status, previous medical diagnosis of allergy, previous positive tests and family history of allergy. Each of these parameters has attributed weighted scores which add up to a maximum score of 16. A diagnosis of *allergic rhinitis* is based on a score of ≥8, while <8 is diagnosed *non-allergic*. The study groups were matched for age and sex by selecting respondents who were >18 years but diagnosed non-allergic based on SFAR. These formed the control group. Participants who were >18 years of age and failed to give signed informed consent were excluded from the study. The sample size was derived using the Fishers formula [1].

Sampling technique was carried out in four stages using multistage sampling technique. In stage one, nine of the sixteen local government areas in Kwara State were chosen by simple random sampling using simple balloting. In stage two, 2 communities were chosen from each of the nine selected LGAs, by simple random sampling using the table of random numbers. In stage three, proportionate allocation was used to allocate the proportion of households that will be sampled in each (of the eighteen) community chosen based on the population of households in the community. In stage four, systematic sampling was used to determine the sampling interval for the houses in the communities sampled.

In each household visited, every first adult (aged >18 years) met was approached and the study (including the purpose, scope, possible benefits and associated risks) was explained to the subject. Informed consent was obtained from subjects. When there was a decline, the next eligible adult in the same household was approached.

A total of 66 participants were diagnosed to have allergic rhinitis out of the 289 respondents sampled. These formed the group 1. They were matched for age and sex from the rest of the respondents who had no allergic rhinitis, and 66 controls were obtained (also from the rest of the 289 respondents). These formed group 2.

2.2. Research instruments

Data were generated from information obtained from the participants using two major instruments by the researchers. The first instrument included the Score for Allergic Rhinitis (SFAR), a validated instrument for making a diagnosis of allergic rhinitis, based on Annesi-Maesano et al. [11] together with other socio-demographic characteristics. The other instrument used was the mini-rhinoconjunctivitis quality of life questionnaire (mini-RQLQ). This instrument involves fourteen items which are grouped into five sub-groups, namely activity limitation, practical problems, nasal symptoms, eye symptoms and other symptoms. The overall classification was recorded as Total Symptom Score (TSS).

Data were collated and analyzed using SPSS statistical package (version 18, Chicago, IL). Differences between categorical variables were explored using the Chi-square test, while Kruskal–Wallis and Mann–Whitney *U* tests were used to test the significance of the various possible contributory factors associated with well-being in allergic rhinitis patients. All analyses were done with statistical significant level of $\alpha = 0.05$.

3. Results

A total of 132 adult participants were seen during the study period. Sixty-six of these were diagnosed to have allergic rhinitis, (AR) using the Score for Allergic Rhinitis (SFAR) instrument and 66 were age- and gender-matched controls ($\chi^2 = 0$, d.f. = 1, $P = 1$ and $\chi^2 = 1.24$, d.f. = 2, $P = 0.54$, respectively). The number of males and females in each group was 30 and 36 respectively. The mean age of the participants was also similar: 37.6 ± 10.0 (allergic) and 35.5 ± 9.1 (non-allergic). Total Symptom Score (TSS) for allergic patients using the mini-RQLQ questionnaire was 3.37 ± 0.9 with a value of 3.61 ± 1.0 for male and 3.16 ± 0.8 for female while for the non-allergic, the values were 0.98 ± 0.2 (males) and 0.95 ± 0.2 (females) (Table 1).

About 70% of the patients with AR (46/66) had mini-RQLQ values of 3 to 5 TSS scores (moderately troubled to quite a bit troubled) for quantifying the health-related quality of life (Table 2). Significant *p*-values were obtained for gender, marital status, number of dependents, senatorial districts, residential area and duration of symptoms ($p = 0.016$, 0.016, 0.012, 0.001, <0.001 and <0.001, respectively). Senatorial districts, residential area and duration of symptoms were noted to have significant *p*-values for almost all the 5 components of the mini-RQLQ (Table 3).

Essentially all the various components of the mini-RQLQ correlated significantly with TSS values ($p < 0.001$) (Table 4). Nasal and other symptoms are more related to the Total Symptom Score (TSS) than any other components ($r = 0.866$ and 0.868, respectively). The highest correlation between the components of

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