PHARMACISTS' ROLES IN OPTIMIZING PHARMACEUTICAL CARE FOR HIV/AIDS PATIENTS INUNIVERSITY OF MAIDUGURI TEACHING HOSPITAL, NORTH-EASTERN NIGERIA

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Abstract
Provision of Pharmaceutical care to patients suffering from chronic diseases such as HIV/AIDS poses great challenges, especially due to use of multiple drug regimen. This study was aimed at examining pharmacists'roles in optimizing pharmaceutical care for HIV/AIDS patients in University of Maiduguri Teaching Hospital, North-Eastern Nigeria in 2010. A cross-sectional study of total population of pharmacists (28) involved in HIV/AIDS management in University of Maiduguri Teaching Hospital was carried out using self administered questionnaire. Majority of pharmacists confirmed that theyidentified,resolved and preventedanti-retroviraldrug therapy problems. Theyprovided HIV/AIDS patients with adequate information necessary for their therapy and were involved in modification of the therapy. Open and effective channels of communicationsexisted between pharmacists and other members of the health care team in HIV/AIDS management. However, Pharmacists were not involved in development of therapeutic plans for HIV/AIDS patients and do not carry out assessment of HIV/AIDS therapy.Home visitations were not carried out by all pharmacists and majority of them do not document ARV therapy as well as the result of each patient managed. Pharmacists**'** roles inidentifying,resolving and preventing ARV drug therapy problems, adequate patient counselling, effective communication with other health care providers would optimize pharmaceutical care for HIV/AIDS Patients. These would contribute to attaining goals of pharmaceutical care. Pharmacists should be involved in the development of ARV therapeutic plan, assessment and documentation of ARV therapies and their results to further optimize pharmaceutical care for HIV/AIDS Patients.
Keywords: Pharmacists, Roles, Pharmaceutical Care, HIV/AIDS, ARV

Introduction

The global AIDS epidemic continues to grow. According to UNAIDS/WHO (2007), an estimated 39.5 million people are living with HIV globally. In the pandemic picture of HIV/AIDS on the African continent, an estimated 3.6 million Nigerians are infected with HIV. This figure continues to rise daily (UNAIDS/WHO, 2007). The first case of HIV/AIDS in Nigeria was reported in 1986. Since then, the number of people living with HIV or AIDS (PLWAS) steadily increased with asero-prevalence of 1.8% in 1991 to 4.6% in 2008 (FMOH, 2008).Inspite of the concerted efforts of the federal government of Nigeria, international and local partners to combat HIV/AIDS, its high burden, associated mortality and morbiditycontinue to be a major public health concern to the country. The epidemic has impacted on many segments of the society. Its impact on Nigeria's social and economic development continues to be pervasive. Provision of Pharmaceutical care to patients suffering from chronic diseases such as HIV/AIDS poses special challenges. This challenge is more for HIV/AIDS due to the complexity of the disease state and increasing use of multiple drug regimens. It is against this background that this study was conducted to evaluate Pharmacists' roles in optimizing pharmaceutical care for HIV/AIDS in University of Maiduguri Teaching Hospital, North-Eastern Nigeria in 2010.

Methods

The study was conducted in University of Maiduguri Teaching Hospital (UMTH),the only University Teaching Hospital in North Eastern Nigeria as at the time of this study. The Hospital runs a medical out-patient department comprising of a general out-patient and specialist medical out-patient clinics. Highly Active Anti-Retroviral Therapy (HAART) Clinic is one of the specialist medical out-patient clinics and it is run every Tuesday.

The study was across-sectional one, involving the use of self administered questionnaire among pharmacists that were involved in HIV/AIDS patient management. Total Population (28) of pharmacists workingin UMTH wereinvolved in HIV/AIDS patient management and constitute sample size for this study. Purposeful sampling of this population was adopted.

The roles of pharmacists identified from literature were framed into questions. The questionaire was structured to derive information onpharmacists' involvement in therapeutic plan formulation, implementation, modification, monitoring, evaluation

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and documentation of ARV therapy; HIV/AIDS Patients' Counseling and Relationship with other Health Care providers.

The developed questionnaire was reviewed by a pharmaceutical care expert in academia for face validity of questions. It was also assessed for content validity in terms of content, scope, depth and appropriateness of each item of the questionnaire. The questionnaire was pre-tested by administering to pharmacists (n=6) working with HAART Clinic in State Specialist Hospital, Maiduguri. Appropriate corrections were made based on analysis of the pre-tested questionnaire. It was also assessed for reliability using split halves method, with cronbach alpha value of 0.618.

The questionnaire was self-administered to the 28 pharmacists working in UMTH, all of whom were involved in HIV/AIDS management. The collected data were analyzed using EPI- INFO software version 3.4.1 2007. Data were presented as frequency distribution tables. Chi-Square Analysis was used to compare proportions and test hypothesis. P-Values $\leq$ 0.05 were considered significant.

Results

Out of the 28 pharmacists whose consents were sought to participate, 26 agreed to answer the self administered questionnaire, giving a response rate of 92.6%. The results were as presented in tables 1 to 3.

As illustrated in Table 1, Sixteen (61.5%) of the pharmacists that responded were not involved in developing therapeutic plan for HIV/AIDS patients in UMTH while the remaining 10 (38.5%) were involved. There was a statistically significant difference in these proportions (χ^2=10.6, p=0.001,df=1). Twenty Two (84.6%) of the pharmacists identified, resolved/ prevented drug therapy problems while 4 (15.4%) do not. There was a statistically significant difference in these proportions (χ^2 =95.2, p=0.00, df=1).

Seventeen (65.4%) of the pharmacists were involved in the modification of therapy for patients while 9 (34.6%) were not involved. There was a statistically significant difference in these proportions (χ^2 =16.8, p=0.00, df=1). 13 (50%) of the pharmacists confirmed that they monitored drug regimen while 13 (50%) do not. There was no statistical difference in these proportions ((χ^2 =0.02, p=0.9, df=1). Fourteen (53.8%) of the pharmacists evaluated ARV therapy for cost-effectiveness while the remaining 8 (30.8%) do not. There was a statistically significant difference in these proportions (χ^2=0.98; p=0.32; df=1). Nine (38.5%) of the pharmacists documented anti-retroviral interventions while 17 (61.5%) do not. There was a statistically significant difference in these proportions (χ^2=10.58; p=0.001; df=1).

In Table 2, eighteen (69.2%) of the pharmacists counselled patients on side effects and interaction of ARVs while a few, 8 (30.8%) do not. There was a statistically significant difference in these proportions (χ^2 =27.38, p=0.00, df=1). None (0.00%) of the pharmacists visited HIV/AIDS patients at homes while 26 (96.2%) do not. There was a statistically significant difference in these proportions (χ^2=196.02; p=0.00; df=1).

Eighteen (69.2%) of the responding pharmacists counselled patients with respect to social, economic and psychological barriers to ARV therapy while 8 (30.8%) do not. There was a statistically significant difference in these proportions (χ^2=27.4, p=0.00, df=1). Twelve (46.2%) of the pharmacists taught the patients how to monitor their CD4 (clusters of differentiation) cell count while 14 (53.8) do not. There was no statistically significant difference in these proportions (χ^2 =1, p=0.32, df=1**)**.

Twenty Five (96.2%) of the pharmacists counselled HIV/AIDS patients on adherence to ARVs while only 1 (3.8%) do not. There was a statistically significant difference in these proportions (χ^2=165.6, p=0.00, df=1).

In Table 3, twenty one (88.5%) of the pharmacists maintained open and effective means of communication with other members of the health care team while 5 (11.5%) do not. There was a statistical difference in these proportions (χ^2=112.50; p=0.00; df=1). Nineteen (77%) of the pharmacists educated other members of the health care team on management of HIV/AIDS patients while 7 (23%) do not. There was a statistically significant difference in these proportions (χ^2=56.18; p=0.00; df=1).

Seven (23%) of the pharmacists do not document the result of each patient along with doctors while the remainind 19 (77%) do. There was a statistically significant difference in these proportions (χ^2=56.18; p=0.00; df=1).

Discussion

The current study revealed that majority of pharmacists were not involved in developing therapeutic plan for HIV/AIDS patients. This falls short of one of the practice principle of pharmaceutical care as reported by American Society of Health System Pharmacists (ASHP) (1999) that the pharmacist, collaborating with other health care providers and the patient should identify and evaluate the most appropriate action to ensure the safety and effectiveness of current or planned therapy, thereby minimizing current or potential health related problems. Foisy and Akai (2004) also reported the

benefit of pharmacists' involvement in developing therapeutic plan to antiretroviral selection and monitoring of drug therapy problem.Significant proportion of pharmacists do not carry out assessment of HIV/AIDS therapy in this study. This is contrary to provision of the first step in pharmaceutical care process which stipulated assessment of therapy for indication, safety and convenience (Simborg and Derewiez, 1995). They were however involved in modification of therapy, probably as a result of feed back from physicians.Most of respondents in the present study identified, resolved and prevented drug therapy problems. This practice is in line with the second step in pharmaceutical care process which stipulates that medication related problems should be prevented (Simborg and Derewiez, 1995). Open and effective channels of communication with other members of the health care team were maintained by most of the pharmacists in this study. The benefit of improved relationship/ interaction between pharmacists and other health care providers has been reported by Abdelmoneim *et al.*, 2006.

Although there was no statistically significant difference in the proportion of pharmacists who evaluates ARV therapy for cost effectiveness and those who do not in this study, pharmaceutical care process stipulates that drug therapy must be convenient and cost-effective for patients as documented by Strand (1998).A high proportion of pharmacists serve as sources of information to patients on a special support/NGO group using Information, Education and Communication materials as advocated by King *et al*. (2008). Majority of the pharmacists confirmed that they do not have in stock drugs required by their patients sometimes. This is against the practice principles of pharmaceutical care, requiring pharmacists to have in their possession all supplies, medicine and information needed for the patients' therapy at all times (ASHP, 1999). Mostof pharmacists in this studycounseled HIV/AIDS patients on adherence to ARV drugs. Nathaniel *et al. (*2009) reported that higher level of adherence was as a result of counseling. King *et al.* (2008) also reported that trained pharmacist provided pharmaceutical care to HIV/AIDS clients by counseling on side effects, appropriate storage and risk factors of infections. Abdelmoneim *et al.* (2006) also reported the need for improvement in patients counseling in hospitals. Majority of the pharmacists confirmed non documentation of all their interventions in this study. Akpan (2002) had identified lack of documentation as one of the barriers to development of pharmaceutical care. Non-Documentation of intervention can therefore be said to be a barrier to optimizing pharmaceutical care for HIV/AIDS Patients in UMTH.

In this study, majority of pharmacists maintained a caring, friendly and responsible relationship with patients which according to Strand (1998), will enhance achievement of desired outcome of pharmaceutical care. Results of the study showed that none of the pharmacists did carry out visitation to homes. This is not consistent with WHO (2000) that reported that people living with HIV/AIDS needs a continuum of care between hospital, clinics and community. Majority of the pharmacists in the present study confirmed that they

Table 1: Pharmacists' Roles in the area of Involvement in Therapeutic Plan Formulation, Implementation, Modification, Monitoring, Evaluation and Documentation of ARV Therapy

Element	*Yes	*No
Developing therapeutic plan	10 (38.5%)	16 (61.5%)
Access to information about HIV/AIDS Patients	11 (42.3%)	15 (57.7%)
Determination of product formulary	6 (23%)	20 (77%)
Assessed ARV therapy	11 (42.3%)	15 (57.7%)
Identified, resolved & prevented drug therapy problems	22 (84.6%)	4 (15.4%)
Modification of therapy for HIV/AIDS Patients	17 (65.4%)	9 (34.6%)
Monitored ARV drug regimen	13 (50%)	13 (50%)
Therapeutic plan for HIV/AIDS Patients on relocation	12 (46.2%)	14 (53.8%)
Followed up/assessed therapeutic effect of ARV drugs	7 (25%)	19 (75%)
Evaluated cost-effectiveness of ARV therapy	14 (53.8%)	12 (46.2%)
Documented anti-retroviral interventions	9 (38.5%)	17 (61.5%)

*Pharmacists significantly differ in their roles in the aspects of therapeutic plan formulation, implementation, modification, monitoring, and evaluation, including documentation of ARV therapy

counsel their patients with respect to social, economical and psychological barriers to ARV

therapy. WHO (2000) reported on issues that needs to be addressed during counseling, being broadly classified into five categories: financial considerations, emotional support, issues of disclosure, adherence and pharmaceutical care - that pharmacists regularly reviews with the patients progress towards achieving the desired outcome and modifies the plan if the expected progress is not being achieved.High proportion of pharmacists in the present studymonitored drug regimen for adherence, efficacy and safety. Paterson *et al* (2000) has already suggested routine monitoring and reinforcement of adherence to ARV. Efficacy monitoring of ARV drugs, using decrease in CD_4 cell count and plasma viral load as indicators have also been reported by Paterson *et al* (2000). Adherence support has been advocated by Poppa *et al* (2003) for patients on ARV drugs.Availability of counselling room was expressed by most pharmacists in this study in line with one of the practice principles of pharmaceutical care which stipulate that the pharmacist should conduct interviews with the patients in a setting designed to ensure privacy (ASHP, 1999).

Table 2: Pharmacists' Roles in HIV/AIDS Patients' Counselling

Element	**Yes	**No
Access to current drug literature on ARV	22 (84.6%)	4 (15.4%)
Availability of Consulting Room	19 (73.1%)	7 (26.9%)
Adequate information for ARV therapy	16 (63%)	10 (37%)
Care, friendly & responsible relationship with HIV/AIDS Patients	24 (92.3%)	2 (7.7%)
Side Effects & interaction of ARV drugs	18 (69.2%)	8 (30.8%)
Visitation to homes	0 (0%)	26 (100%)
Social, Economic & Psychological Barriers	18 (69.2%)	8 (30.8%)
Monitoring of CD_4 Count	12 (46.2%)	14 (53.8%)
Seminars on HIV/AIDS Counselling	13 (50%)	13 (50%)
Adherence	25 (96.2%)	1 (3.8%)

**Pharmacists significantly differ in their roles in the areas of HIV/AIDS Patients' Counselling

Table 3: Pharmacists' Roles in their Relationship with other Health Care Providers

Element	***Yes	***No
Maintained open and effective means of communication	21 (88.5%)	5 (11.5%)
Educates on management of HIV/AIDS Patients	19 (77%)	7 (23%)
Documented the results of each HIV/AIDS Patient	7 (23%)	19 (77%)

***Pharmacists significantly differ in their roles in the aspects of their relationship with other Health Care providers.

Conclusion

Pharmacists' roles in identifying, resolving and preventing ARV drug therapy problems, adequate patient counselling, effective communication with other health care providers was well established. These would optimize pharmaceutical care for HIV/AIDS Patients and contribute to attainment of pharmaceutical care goals. Significant proportion of Pharmacists were however, not adequately involved in development of ARV therapeutic plan, assessment and documentation of ARV therapies in this study.

Recommendation

Pharmacists should be adequately involved in the development of ARV therapeutic plan, assessment and documentation of ARV therapies and their results to further optimize pharmaceutical care for HIV/AIDS patients.

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