Knowledge and Perceived Effect of Polypharmacy and Potentially Inappropriate Medication Use among Nurses in a Nigerian Tertiary Hospital

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Abstract

Background: Polypharmacy (PP) and inappropriate medication use (IMU) are issues that negatively affect the health care system. Despite nurses’ engagement and important role in prevention of drug-related issues, awareness regarding consequences of PP and IMU is relatively low. This study aimed to determine the knowledge and perception effects about PP and IMU among nurses in the Lautech teaching hospital, Osun state, Nigeria.

Methods: This descriptive, cross-sectional study was performed on 190 randomly selected nurses working at the Lautech teaching hospital (Osun state, Nigeria) in June 2020. Data were collected using a researcher-made questionnaire. The reliability of the questionnaire was verified by obtaining a Cronbach alpha score of 0.77. Data analysis was done in SPSS 25 using descriptive statistics, the Chi-square test. All analyses were carried out at significance level of 0.05.

Results: The findings revealed that most nurses (84.2%) had good knowledge about PP. In addition, 93.2% of the nurses claimed that IMU should be entirely avoided. According to the nurses, the most important perceived effect of PP and IMU was adverse drug reactions (57.9%). There was a significant relationship between nurses level of educational and knowledge of PP (r=12.095, P=0.002). Moreover, there was a positive correlation between the respondents’ age and knowledge of PP (r=0.204, P=0.016). There was also a significant negative correlation between the nurses’ knowledge and perceived effect of PP and IMU (r=-0.605, P<0.001).

Conclusion: The results indicate that the nurses working at the study setting possess good knowledge of PP and IMU. Educational programs such as seminars and workshops are essential for translating this information into routine nursing care.

Highlights:

What is current knowledge?
Polypharmacy and use of inappropriate medication are issues increasingly affecting the health care system. Despite nurses’ engagement and useful role in prevention of drug-related issues, the awareness regarding consequences arising from polypharmacy and also the use of inappropriate medication is considerably low.

What is new here?
Assessment of knowledge and perception of polypharmacy effects and inappropriate medication use among nurses fosters identification of patients at increased risk of polypharmacy. It also promotes anticipation of potential complications that could arise from multiple drugs and medications used inappropriately.

Introduction

Polypharmacy (PP) and inappropriate medication use (IMU) are ubiquitous problems that rapidly invade the healthcare system, with direct and indirect impact on nursing care. Sometimes, patients take a complex combination of drugs and supplements, but this can cause more harm than good. It is estimated that more than half of all medications are prescribed, distributed, or traded inappropriately, with many of these leading to preventable harm (1).

According to Masnoon et al, PP is a patient safety issue mostly concerned with situations where patients take five or more medications simultaneously (2). The global prevalence of PP has increased tremendously in the last 20 years with variations across countries ranging between 7% and 90% in different populations (3, 4). In the United States, the prevalence of PP has been estimated to be 10% among the general population and 30% among the older adults (5). A similarly high prevalence has been reported in some African countries such as Uganda, Togo, and Nigeria (6–9).

More recently, research indicated that PP is associated with drug reactions and acute care hospitalization in four out of every one thousand people annually. It is also associated with annual costs estimated at $180 billion in the US alone (5).

Studies have shown that PP is the main risk for potentially inappropriate medication prescription (9, 10). Nurses have an important role in the management of PP- and IMU-associated consequences. They are principally involved in the care process from admission to discharge. Deprescribing is a public phenomenon involving planned and supervised method of dose reduction or termination of medication, which may be harmful to the user (11). Previous studies demonstrated the inadequate knowledge of clinicians and resources to evaluate care and embrace deprescribing in patients experiencing multiple comorbidities and PP (12–14).

Various reasons for Nurses’ lack of confidence in addressing polypharmacy were reported, additionally to issues of withdrawal, ability to observe, discontinue or modify a medicine prescribed by another care giver, lack of clarity related to tapering, failure in disorder management, and different harmful effects (13). Despite the need for raising awareness in order to deal with PP and medication management within primary care, the implementation of evidence-based solutions has been sub-optimal (12, 14, 15).

Several studies have shown an increasing prevalence of PP and IMU in the management of multi-morbidity, especially in the elderly. Some studies also recognized the need for educational training of nurses about medication prescription as a potential strategy to minimize IMU (16). However, very little is known about the knowledge of nurses on the effects of PP and IMU. Given that the safe administration of medication is an important role of nurses, adequate knowledge of nurses is essential to prevent adverse health outcomes that could arise from PP and IMU (17). This study aimed to provide an overview of the current state of nurses’ knowledge and perception about PP and IMU. The guiding objectives of the study are: (a) to investigate nurses’ knowledge and perception...
of PP and IMU, (b) to identify the causes of PP and IMU, (c) to assess their perceived effect of PP and IMU, and (d) to identify the perceived factors preventing IMU and PP.

Methods

Study design and setting
This descriptive, cross-sectional study was carried out in November 2020 to elicit knowledge and perception of nurses in Ladoke Akintola University of Technology (LAUTECH) Teaching Hospital Osogbo (Osun State, Nigeria) about PP and IMU. The hospital offers tertiary care services and serves as a referral center to neighboring health institutions within the Oyo and Osun States. It has 32 wards and over 10 clinical nurse specialty areas (mental, orthopedics, perioperative nursing, nurse anesthetists, ophthalmology, accident and emergency, nephrology, pediatric, and oncology nursing).

The inclusion criterion was being a nurse in the hospital for not less than a year. The researchers assumed that experience on PP could only be gained via work experience. Nurse managers were excluded because they are less likely to have direct interaction with patients.

Sample size calculation
A list of nurses working in various units/wards of the hospital was obtained from the hospital’s administrative department. From a total population of 300 nurses, sample size was determined as 171 using the Taro Yamane formula, at 95% confidence level. After adjusting sample size for 10% non-response rate, a sample size of 190 was considered for the study. The subjects were selected via computer-generated random sampling to eliminate bias. Stratification was further applied to ensure adequate representation of nurses across various specialty areas within the hospital.

Data collection instrument
A researcher-made questionnaire was developed after an extensive review of the literature. The questionnaire were scored based on a Likert type scale and consisted of 35 questions comprising five sections:

Section A: demographic factors
Section B: Nurses' knowledge and perception of PP and IMU
Section C: the causes of PP and IMU
Section D: effects of PP and IMU
Section E: factors preventing PP and IMU.

Validity and reliability of the instrument
The content and face validity of the questionnaire were ascertained by the research team (two clinical and research nurses as well as four public health nurse specialists). Data from content validity showed that all 35 items had high index of content validity (C-V) of 0.75 in all domains. Next, a pilot study was carried out to determine the instrument’s reliability by administering 10% (19) of the questionnaires to nurses in another setting (the State Specialist Hospital in Osogbo). A test-retest reliability method was administered at an interval of two weeks to determine the reproducibility of the questionnaire (18). Consequently, a Cronbach's alpha score of 0.77 was obtained, indicating the validity of and reliability of the instrument (19).

Data collection
Ethical approval was obtained from the ethical and research committees of the LAUTECH Teaching Hospital with the code of ethics (LTH/EC/2020/11/482). Written informed consent was also taken from the participants. Given that the study was carried out during the COVID-19 pandemic, strict precautionary measures were taken to minimize risk of coronavirus transmission. Careful consideration was given to ensure that subjects were not sampled twice. The participants were encouraged to complete the questionnaire independently to minimize sharing views and information between the subjects. Overall, 190 questionnaires were distributed and fully answered. Two members of the research team (OA and BO) were present throughout data collection to provide clarifications. Confidentiality and anonymity of personal information were maintained throughout the study.

Data analysis
Data were analyzed using the statistical package for social sciences (SPSS) version 25.0. Descriptive statistics including mean, frequencies, percentages, and standard deviation were used to describe data. Association between categorical and continuous variables was investigated using the chi-square and Pearson correlation coefficient at statistical significance of 0.05.

Results

Sociodemographic characteristics of the subjects
The sociodemographic data of the subjects are shown in Table 1.

Knowledge and perception of PP and IMU among nurses

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
</tr>
<tr>
<td>20-30</td>
<td>40 (21.1)</td>
</tr>
<tr>
<td>31-40</td>
<td>43 (26.9)</td>
</tr>
<tr>
<td>41-50</td>
<td>71 (37.4)</td>
</tr>
<tr>
<td>51-60</td>
<td>36 (19.0)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>74 (38.9)</td>
</tr>
<tr>
<td>Female</td>
<td>116 (61.1)</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>29 (15.3)</td>
</tr>
<tr>
<td>Married</td>
<td>151 (79.5)</td>
</tr>
<tr>
<td>Divorced</td>
<td>10 (5.3)</td>
</tr>
<tr>
<td>Educational background</td>
<td></td>
</tr>
<tr>
<td>RN/RM</td>
<td>67 (35.3)</td>
</tr>
<tr>
<td>Post basic</td>
<td>42 (22.1)</td>
</tr>
<tr>
<td>MSc</td>
<td>48 (25.3)</td>
</tr>
<tr>
<td>PhD</td>
<td>33 (17.4)</td>
</tr>
<tr>
<td>Cadre</td>
<td></td>
</tr>
<tr>
<td>Nursing Officer I (NO I)</td>
<td>53 (27.9)</td>
</tr>
<tr>
<td>Nursing Officer II (NO II)</td>
<td>41 (21.6)</td>
</tr>
<tr>
<td>Senior nursing officer (SNO)</td>
<td>22 (11.6)</td>
</tr>
<tr>
<td>Principal Nursing Officer (PNO)</td>
<td>30 (15.9)</td>
</tr>
<tr>
<td>Assistant Director of Nursing Services (ADNS)</td>
<td>22 (11.6)</td>
</tr>
<tr>
<td>Chief Nursing Officer (CNO)</td>
<td>22 (11.6)</td>
</tr>
<tr>
<td>Units</td>
<td></td>
</tr>
<tr>
<td>Orthopedic</td>
<td>30 (15.8)</td>
</tr>
<tr>
<td>Surgical</td>
<td>28 (14.7)</td>
</tr>
<tr>
<td>ENT</td>
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<tr>
<td>Medical</td>
<td>31 (16.3)</td>
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<tr>
<td>Neurology</td>
<td>20 (10.5)</td>
</tr>
<tr>
<td>Pediatric</td>
<td>27 (14.2)</td>
</tr>
<tr>
<td>Burns</td>
<td>21 (11.1)</td>
</tr>
<tr>
<td>Years of practice</td>
<td></td>
</tr>
<tr>
<td>Less than 5</td>
<td>55 (28.6)</td>
</tr>
<tr>
<td>5-10</td>
<td>69 (36.3)</td>
</tr>
<tr>
<td>11-15</td>
<td>33 (17.4)</td>
</tr>
<tr>
<td>Above 15</td>
<td>37 (19.5)</td>
</tr>
</tbody>
</table>

*Registered Nurse/ Registered Midwife

The sociodemographic data of the subjects are shown in Table 1. The sociodemographic characteristics of the subjects

The result showed that 90% of the respondents have heard of PP and 87.4% agreed that PP is the use of different drugs for the treatment of a single disease. Likewise, 93.2% agreed that inappropriate medication should be entirely avoided, while 64.2% claimed that PP can lead to IMU. The assessment of respondents’ level of knowledge of PP and IMU was done by assigning a score of “1” to each correct response and a score of “0” to incorrect responses to make a total score of 5. Interquartile percent (25%, 50%, and 75%) was used to grade knowledge into poor, average, and good. Findings of the study revealed that 11 subjects (5.8%) had poor knowledge of PP, 19 (10%) had average knowledge, and 160 (84.2%) had good knowledge of PP and IMU.

Perceived causes of PP and IMU

Data on perceived causes of PP and IMU revealed that 58.9% of the subjects expressed that presence of co-existing conditions and chronic diseases as reasons for PP, while 65.3% believed that visiting multiple physicians for medical problems is the source of PP. In addition, 53.1% of the subjects disagreed with inadequate documentation, while 64.3% of the subjects believed that obtaining information from families and the internet contribute to PP and IMU. Furthermore, 52.1% of the respondents agreed that increasing age is a predisposing factor to IMU. However, the rest of the respondents (57.8%) claimed that poor communication between patients and caregivers could be a possible cause of PP. Moreover, 70.5% of the subjects believed that easy access to different medications is a major causative factor.
Discussion

Nurses are strategically positioned to ensure holistic healthcare services are provided to patients, especially concerning medication administration. In this regard, we assessed the knowledge and perception of nurses about the effects of PP and IMU on patients.
use of medications by patients and health care providers. Moreover, healthcare professionals should collaboratively work towards raising the level of awareness and knowledge about the effects of PP and IMU in order to reduce potential drug-related problems.

Indeed, PP is a problem of substantial importance in terms of both direct and indirect medication costs. Although nurses are less involved with the duty of drug prescription, however, nurses need to possess the ability to convince patients on avoidance of self-medication. Thorough educative advice will serve to reduce the stress imposed on nurses in managing the negative consequences of inappropriate drug use. Also, continuing education programs organized through routine professional training can translate nurses' knowledge into practice.

Acknowledgements
The authors would like to extend their sincere gratitude to the nurses who participated in this study.

Funding source
The study was self-sponsored by the researchers.

Ethical statement
The study was approved by the ethics and research committee of LAUTECH Teaching Hospital (Code: LTH/EC/2020/11/462). The principles of Helsinki declaration were upheld to protect the rights of individual participant recruited for the study.

Conflict of interest
The authors declare that there is no conflict of interest regarding publication of this article

Author contributions
Study conception and design: OOA, BDO; Data collection: OOA, BDO; Data analysis and interpretation: OOA, OA; Drafting of the article: All Authors; Critical revision of the article: OEA, OA, ZOO, KIJ, SOA

References