Original Article

The Role of Physicians' Knowledge of Guidelines in the Usage of Beta-Blockers in Heart Failure

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ABSTRACT

Background: Beta-blockers (BB) are recommended in the management of heart failure (HF), but its usage has been reported as low. The role of physicians' knowledge of guidelines in this observation has not been fully investigated.

Objectives: The objective was to determine whether a gap in the physicians' knowledge of guidelines for the use of BB in HF is a reason for its low usage.

Materials and Methods: Questionnaires were distributed to physicians in the Departments of Internal and Family Medicine. Multiple choice questions based on the 2016 European Society of Cardiology guidelines for the use of BB in HF were in the questionnaire. A physician was adjudged knowledgeable of the guidelines if he/she scored 50% or above. The proportion of physicians with inadequate knowledge was derived as a percentage of all respondents. Chi-square test was used to determine whether department, gender and cadre were associated with knowledge of guidelines.

Results: A total of 70 physicians responded. Departments of Family and Internal Medicine, respectively. Fifty-five (78.6%) of them were not knowledgeable about the guidelines for the use of BB in HF, while only 15 (21.4%) were knowledgeable. Association between a physician's department, gender, cadre and knowledge of HF guidelines yielded $P = 0.774$, 0.144 and 0.227, respectively.

Conclusion: There is a gap in the physicians' knowledge of the guidelines for BB use in HF. Measures to educate and regularly update physicians on HF guidelines should be institutionalised to ensure evidence-based practice, improved care and better outcomes.

Keywords: Beta-blockers, guidelines, heart failure, physicians' knowledge

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INTRODUCTION

Major international heart failure (HF) guidelines[1,2] have recommended beta-blockers (BB) specifically for the management of HF with reduced ejection fraction. They have been shown to improve symptoms, reduce HF-related hospitalisation and reduce all-cause mortality in HF.[3-6] However, despite these benefits, studies have reported low usage of BB in HF compared with other neurohormonal antagonists.[7-10] These guidelines need to be translated into practice by physicians. Physicians, therefore, require adequate knowledge for clinical implementation.

The physicians' knowledge of HF treatment guidelines has not been fully evaluated. Mbakwem and Ajuluchukwu[11] assessed the perception of Nigerian internal medicine residents on the diagnosis and management of HF, but this was conducted well over a decade ago, and the use of BB was not the focus of their study. Phillips *et al*.[12] and Yao *et al*.[13] reported clinical inertia, fear of transient deterioration of symptoms, advanced age, female gender and the presence of co-morbidities as possible reasons for the low usage of BB in HF. However, these studies did not assess the knowledge of HF treatment guidelines among physicians and they were conducted abroad.

Therefore, to the best of our knowledge, a gap in physicians' knowledge of guidelines has not been established as a factor responsible for the low usage of BB in HF in our practice. This is the justification for this study. Information from this

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study will determine whether physicians' knowledge of guidelines has a role in the reported low usage of BB in HF. We hypothesised that there are gaps in the physicians' knowledge of guidelines for the use of BB in HF.

Thus, the purpose of this study is to determine if there is a gap in physicians' knowledge of guidelines for the use of BB in HF.

MATERIALS AND METHODS

Approval from the Institution's Research and Ethics Committee was obtained, and the procedures followed were in accordance with the Ethical Standards of the Helsinki Declaration. The study was conducted in a tertiary health centre located in South - West Region of Nigeria. The study participants were resident doctors (physicians in post-graduate training) in the Departments of Internal and Family Medicine. Resident doctors are involved in the management of HF patients because the very few cardiologists available cannot attend to the teeming population of HF patients. Resident doctors, therefore, need to be conversant with HF treatment guidelines.

Inclusion criteria

Resident doctors who volunteered to participate in the study.

Exclusion criteria

Resident doctors who declined participation in the study.

A self-administered questionnaire was designed with the guidance of Professors of Cardiology to assess residents' knowledge of guidelines for the use of BB in HF based on the 2016 European Society of Cardiology (ESC) HF guidelines. The ESC guidelines are international and globally acceptable. There are no recent indigenous HF treatment guidelines.

The initial questions were on sociodemographic variables of the respondents, while the others were multiple choice questions based on the operational guidelines, and each multiple choice question had one correct answer. The demographics included gender, physician's cadre (junior or senior resident), department and number of years of practice post-graduation. Questions on the recommended left ventricular ejection fraction and clinical status for the use of BB in HF were included, and they were cardinal questions because they are considered basic and essential to the use of BB in HF.

The others questions were on the appropriate time to commence BB in relation to other drugs; recommended start dose and titration method. Knowledge of contraindications to the use of BB and the preferred type of BB was ascertained. Finally, the respondents were asked to rank their level of confidence in prescribing BB in HF patients.

The questionnaire was preliminarily tested on residents in the cardiology unit before it was distributed to other residents in the Departments of Internal and Family Medicine. Informed consent was obtained from all the participants. The questionnaires were filled and returned immediately.

Scoring system

Each question was given a score of 1. A resident was adjudged to possess adequate knowledge of the guidelines if he/she scored 50% or above provided the two cardinal questions were answered correctly. A score of <50% was considered inadequate knowledge even if the cardinal questions were answered correctly.

Data were analysed with Statistical Package for Social Sciences (SPSS) version 16 (SPSS Inc., Chicago, IL, USA). The proportion of respondents with adequate and inadequate knowledge of the guidelines was determined. Both groups were compared to determine any significant association in relation to the resident's cadre, gender, department and number of years of practice. An association between categories was sought using Chi-square test. $P < 0.05$ was considered as statistically significant.

RESULTS

Forty-one and 43 questionnaires were distributed in the Departments of Internal and Family Medicine, respectively. The response rates were 36 (87.8%) and 34 (79.1%) in the Departments of Internal and Family Medicine, respectively. On self-assessment, 26 (37.1%) of the respondents claimed to be confident with the use of BB in HF, while 44 (62.9%) were not certain. Majority of the confident and uncertain respondents did not pass the survey: 20 (76.9%) and 35 (79.5%), respectively. The question on the specific type of HF (reduced or preserved ejection fraction) in which BB are recommended was the most wrongly answered question – 55 (78.6%), while the question on initial dose of BB was the most rightly answered question – 60 (85.7%).

DISCUSSION

The results showed that 55 (78.6%) of the respondents did not have adequate knowledge of the guidelines for the use of BB in HF, while only 15 (21.4%) were knowledgeable [Figure 1]. This performance means that gaps in knowledge of guidelines for usage of BB in HF exist among physicians and is a factor responsible for the low usage of BB in HF. In a related study, knowledge of guidelines did not necessarily translate to its implementation in practice.[14] However, this result corroborates the hypothesis made at the onset of the study that there is a gap in knowledge of guidelines for the use of BB in HF among physicians.

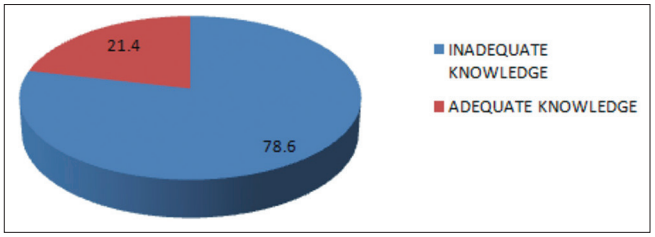

Figure 1: Proportion of physicians with adequate and inadequate knowledge of guidelines

A likely explanation for this result is the high ratio of junior to senior residents (62.9% vs. 37.1%) in the study group [Table I]. The senior residents are expected to be more knowledgeable than their junior colleagues because they have had more exposure from clinical practice and update courses. This view is supported from findings in a study by Ohsaka *et al*.[15] suggesting that seniority of physicians influences knowledge and adherence to guidelines.

Shoukat *et al*.,[16] in Pakistan, reported 20% awareness of guidelines in a survey, while Wei *et al*.,[17] in China, reported a considerable knowledge gap of HF guidelines among Chinese physicians. These results are similar to that of this study; this may be due to the fact that these surveys were conducted on non-cardiologists. Table II shows that there was no significant association between sociodemographic variables and knowledge of guidelines as shown by the *P* values (0.144, 0.227, 0.77 and 0.53). Therefore, gender, cadre, department and number of years of practice post-graduation are not determinants of knowledge of guidelines.

The results show that majority 55 (78.6%) failed the question on the specific type of HF (reduced or preserved ejection fraction), in which BB are recommended. A likely explanation for this finding is that the respondents were not yet specialists but post-graduate doctors in training. However, the question on start dose (low or high dose) to initiate BB was correctly answered 55 (78.6%). Furthermore, only 26 (37.3%) of the respondents claimed to be very confident in prescribing BB in HF This is most probably due to fear of adverse effects because BB were initially contraindicated in HF before studies provided evidence for their benefit. Inexperience with its use may also be a factor in the lack of confidence.

A further research study would be to compare adherence with guidelines (practice) between physicians with and without adequate knowledge of guidelines by studying their patients' case files. Knowledge and practice of HF treatment guidelines could also be compared between physicians at different levels of healthcare. This was a single-centre survey with limited generalisation of its findings. Nevertheless, the study has achieved the main objective which was to determine whether there are gaps in knowledge of guidelines for the use of BB in HF among physicians. The gross extent the gaps observed is sufficient to be responsible for the reported low usage of BB.

Table I: Sociodemographic variables of all respondents (*n*=70)

Variables	Category	*n* (%)
Department	Internal medicine	36 (51.4)
	Family medicine	34 (48.6)
Gender	Male	32 (45.7)
	Female	38 (54.3)
Cadre	Junior resident	44 (62.9)
	Senior resident	26 (37.1)
Years of practice	<10	48 (68.6)
	≥10	22 (31.4)

Table II: Social demographic variables of physicians with inadequate and adequate knowledge of guidelines

Variables	Category	Inadequate knowledge, *n* (%)	Adequate knowledge, *n* (%)	*P*
Department	Family medicine	26 (47.3)	8 (53.3)	0.774
	Internal medicine	29 (52.7)	7 (46.7)	
Cadre	Junior resident	37 (67.3)	7 (46.7)	0.227
	Senior resident	18 (32.9)	8 (53.3)	
Gender	Female	27 (49.1)	11 (73.3)	0.144
	Male	28 (50.9)	4 (26.7)	
Years of practice	≥10	16 (29.1)	6 (40.0)	0.532
	<10	39 (70.9)	9 (60.0)	

CONCLUSION

There is a significant gap in physicians' knowledge of guidelines for the use of BB in HF. Therefore, appropriate interventions must be instituted to educate and regularly update physicians on HF guidelines to ensure evidence-based practice, improved care and better outcomes.

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Conflicts of interest

There are no conflicts of interest.

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