ISSN: 2230-9926

Available online at http://www.journalijdr.com

IJDR

International Journal of Development Research
Vol. 12, Issue, 01, pp. 53338-53341, January, 2022
https://doi.org/10.37118/ijdr.20084.01.2022

RESEARCH ARTICLE OPEN ACCESS

PREPAREDNESS OF THE HEALTH CARE WORKFORCE FOR MANAGEMENT OF ASTHMA AT THE PRIMARY HEALTH CARE FACILTIES IN WESTERN KENYA

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ARTICLE INFO

Article History:
Received 10th October, 2021
Received in revised form
27th November, 2021
Accepted 08th December, 2021
Published online 30th January, 2022

Key Words:

Preparedness of health care workforce, Management of asthma, Western Kenya.

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ABSTRACT

Background: Due to limited workforce at the referral or higher-level health facilities, there is a recommendation to shift task of prevention and control of some NCDs to lower level heath facilities. However, the preparedness of the workforce at primary health care facilities is poorly understood. **Objectives:** The aim of this study was to access the knowledge, practices and barriers on the treatment and management of asthma among health workers at the primary facilities (Level 2) in Bomet County. **Methods**: This study employed a cross-sectional study design. Census method was used to select 90 health workers while 5 sub county public health officers were selected using purposive sampling. Data was collected using semi-structured questionnaires and key informant interview guide. **Results**: We assessed whether the respondents had a guideline for the treatment and management of asthma at the health facility and majority 63.6% (n=56) said no and a key informant'sinterviewer reiterated that "Asthma patients were not treated according to the approved guideline because of its unavailability at health facilities and challenges of implementing it in a resource limited settings". In addition, the majority (61.6%, n=54) agreed that they have the capacity to treat and manage asthmaand only30.8% (n=28) agreed that people come with severe conditions that they cannot treat. The major concern (100%, n=88) was lackequipment to treat and manage asthma conditionsand lack or limited refresher training 64.4% (n=65). Majority says that other barriersrelated to the patients are distance to the health facility 67.9% (n=59) and cultural belief 64.6 (n=57). All the respondents say that inter-facility transfer and harsh weather conditions are barriers. **Conclusion**: This study shows that task shifting can be explored with current capacity of health care workforce but there are gaps that relate to the facilities and patients. The study therefore provides an insight for developing a model or a framework for task shifting of NCDs related health services at primary health care facilities in resource limited environments.

Citation: ***Joel Kimutai Rob, Veronicah Knight, Lorine Kemunto Kangwana, George Ayodo and Fred Amimo Fred.*** "Preparedness of the health care workforce for management of asthma at the primary health in Western Kenya*", International Journal of Development Research*, 12, (01), 53338-53341.

INTRODUCTION

Asthma is a non-communicable diseasethat affects334 million people globally making it a major cause morbidity and mortality world wide (Asher & Pearce, 2014) According to WHO, 250,000 deaths are reported annually from Asthma making it to be among the top 20 causes of disability worldwide (Braman, 2006). In 2011, the prevalence of asthma was estimated as 10% in Kenya but this is thought to be under-estimated burden due to under-diagnosis insub-Saharan Africa (Braman, 2006). The goal of the global initiative on asthma (GINA) on therapy is to achieve and maintain the disease control (NIH, 1995). GINA guideline is being used for prevention and management in Kenya, however there is no national treatment guideline and therefore GINA is adapted for local settings (Desalu *et al.*, 2016; Desalu *et al.*, 2011). Diagnosis of asthma helps the physicians to determine the appropriate treatment to provide to the patient.

Clinical history involving physical examination is commonly used in the diagnosis of asthma. This is recommended for patients who present to the facility with the following symptoms frequent episodes of wheeze, cough, chest tightness and shortness of breath. The asthma guideline recommends measuring of lung function with spirometry on all patients suspected to have asthma. The control of asthma especially in children has continued to be a challenge and non-adherence to guidelines for asthma management by practitioners is noted as a cause (Ayuk *et al.*, 2017). This requires proper diagnosis, adequate management, and regular follow-up (Bateman *et al.*, 2008). The medicines used to treat asthma are grouped into two namely relievers (bronchodilators) and controllers (anti-inflammatory drugs) also known as preventors (Bryan, 2000). Relievers slow down broncho-constriction while controllers act as anti-inflammatory agents (Bryan, 2000). Some of the factors that contribute to low adherence to the guideline include lack of awareness among healthcare professionals, patient factors and low availability of the guidelines. In addition to lack of devices and equipment for diagnosis

and treatment of asthma (Wahabi & Alziedan, 2012). In low and middle income countries (LMICs), physicians at higher level facilities are the first contact of NCDs including asthma and the workforce is very limited (Kar *et al.*, 2008; Welfare., 2010; WHO, 2006). An alternative workforce has therefore been recommended structured round the community and consumer needs, and these are professional with lower level of educations and based close to the households (Lekoubou *et al.*, 2010). This study assessed the preparedness of workforce at the primary health care facilities for task shifting as regards to the treatment and management of asthma.

METHODS

Setting for the study: The study was carried outat Ministry ofhealth level2public facilities in Bomet County in Kenya.These level 2 health facilities are managed by professional health workers and serves 90% of patients in the County.Bomet County is situated in the former Rift Valley Province of Kenya and has a population of 857,689 (2019 census) and an area of 1,630 km².The level 2 health facilities provide outpatient care to common diseases such as malaria or refer the patients to level 3,4 or 5 health facilities for further investigation and management.

Study Design: This study was a cross-sectional study design that targeted health care workers at L2 health facilities. The study used both quantitative and qualitative approaches. The data collection tools utilized in this study were semi-structured questionnaire and key Informant Interview guide in which the questions were formulated based on the research questions. Reliability was achieved by pre-testing the questionnaires on 10% (9) of the sample size in nearby L2 health facilities outside the county.

Study population: The study population weregovernment employedhealth care workers in level 2 health facilities in the County. We however excluded health care workers who had worked for less than (6) months in the health facilities. The health care workers (public health officers) in charge of the sub-county were involved in the key informant's interview.

Sample size and sampling procedures: The sample size for this study was 90 health care workers (clinicians and nurses) and 5 sub county public health officers. The healthcare workers were selected using the census method while purposive sampling was used to select the sub County public health officers.

Data Collection: Data was collected using both semi structured questionnaire and interview guide. The questionnaire was self-administered to the study participants and it contained four sections. Section A consisted of questions on the demographic characteristics of the study participants. Section B contained questions on the practice of treatment. Section C had questions on the barriers to asthma treatment. Qualitative data was collected by use of an interview guide administered on 5 purposively selected sub county officers.

Ethical considerations: The study participants were informed about the study and participation in the data was voluntary. They were informed that the data collected would only be used for the purpose of the study. All the health care workers voluntarily gave their informed consent prior to taking part in the study. In addition, the informants voluntarily consented to take part in the study and they were assured of the confidentially of the data collected from them. Further, approval to carry this study was obtained from Board of Post Graduate Studies of Jaramogi Oginga Odinga University of Science and Technology (JOOUST) and the Research and Ethical Committee of JOOUST. Further, permission was obtained from the County Health Management Team of Bomet County.

Data analysis: Grouping and coding of data collected was done to ease sorting. Completeness and consistency of information obtained was checked. Descriptive statistics were used to analyze the data, and finding in this paper is presented in formtables for easy interpretation. Analyzing was performed using the Statistical package for social sciences (SPSS) version 21.

RESULTS

Demographic Characteristics of the Respondents: There were 90 respondents and overall return rate of the administered questionnaires was 98% as two questionnaires were incomplete.As regards to the demographic characteristics, the majority of the study participants 59.1% (n=52) were males while 40.9% (n=36) were females.Majority (50%) of the respondents of the study participants were aged 20-29 years while 39%(n=34) were aged 30-39 years.All the study participants had tertiary level of education with the majority having a diploma, 9% (n=8) University degree and 8% (n=7) certificate. Majority 67.1% (n=59) of the participants were registered community nurse, 22.7% (n=20) were registered clinical officer while 5.7% (n=5) were enrolled community nurse (Table 1).

Table 1: Demographic Characteristics

Variable	Group	Freq (#)	Percent (%)
Gender	Female	36	40.9
	Male	52	59.1
Education	Certificate	7	8
	Diploma	73	83
	Degree	8	9
Occupation	Enrolled Nurse	3	3.4
	Enrolled Midwife	1	1.1
	Enrolled Community Nurse	5	5.7
	Registered Community Nurse	59	67.1
	Registered Clinical officer	20	22.7

Practices of treatment of asthma: We assessed whether the respondents had guidelines for the treatment and management of asthma. Majority 63.6% (n=56) of the respondents said no while 36.4% (n=32) said they had the guideline.The majority of key informants' respondents (4 out of 5) stated that "Asthma patients were not treated according to the approved guideline because ofthey are not availableat health facilities". This concern with the guideline was approved when the respondents were asked if antibiotics could be used for treating asthma, majority agreed (55.7% (n=49), 18.2% (n=16) were neutral, 15.9% (n=14) and disagreed while 10.2% (n=9). However, all the respondents agreed that bronchial dilators were the approved drugs for asthma treatment. Further, majority of the respondent 53.4% (n=47) agreed that that some analgesic are used for management treatment of asthma and over 80% (n=72) agreed that antihistaminesand steroid are the approved drugs for treatment of asthma. On whether anthelminthic are used in the treatment of asthma, majority (80%, n=72) disagreed (Table 1).

Table 2. Practices of treatment of asthma

Approved drugs for Asthma	Strongly Disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N(%)	Strongly Agree N (%)
Antibiotics	9(10.2)	14(15.9)	16(18.2)	37(42.1)	12(13.6)
Bronchial Dilator	-	-	-	26(29.6)	62(70.4)
Some Analgesic	6(6.8)	19(21.6)	16(18.2)	39(44.3)	8(9.1)
Antihistamine	3(3.4)	7(8.0)	7(8.0)	44(50)	27(30.6)
Steroid	2(2.3)	4(4.5)	5(5.7)	42(47.7)	35(39.8)
Anthelmintic	42(47.7)	30(34.1)	8(9.1)	5(5.7)	3(3.4)

Reason for not treating asthma at the health facilities: Table 2 shows that majority of respondents 53.9% (n=48) agreed that people use asthma drugs at home and therefore only come to the facilitywith severe conditions. However, only 30.8% (n=28) agreed that people come with severe conditions that they cannot treat. In addition, Only20.8% (n=19) agree that there are no drugs. More importantly, majority 61.6% (n=54) agree that they have the capacity to treat and manage asthma (Table 2).

Table 3. Reasons for health care workers not treating asthma at the health facility

Reason for not treating of Asthma	Strongly Disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N (%)	Strongly Agree N (%)
Patients come with severe conditions	20(23.1)	20(23)	20(23.1)	14(15.4)	14(15.4)
There are no drugs	27(30.7)	20(23.1)	14(15.4)	5(5.4)	14(15.4)
We do not have capacity to treat and manage asthma	34(38.5)	20(23.1)	13(15.3)	20(23.1)	0(0)
Most people use asthma drugs at home	14(15.4)	14(15.4)	14(15.4)	34(38.5)	14(15.4)

Table 4. Barriers to treatment and management of Asthma

Barrier/ Challenges on Asthma treatment	Strongly Disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N (%)	Strongly Agree N (%)
Lack of spirometry for diagnosis	3(3.7)	17(19.7)	12(13.6)	32(35.8)	24(27.2)
Visiting facility of referral cases	2(2.4)	16(18.3)	18(20.7)	37(41.5)	15(17.1)
Long distance from equipped health facilities	2(2.5)	8(8.6)	18(21.0)	43(49.4)	16(18.5)
Cultural belief	2(2.4)	17(19.5)	12(13.4)	46(52.4)	11(12.2)
Lack of refresher training on treatment of asthma	1(1.2)	7(8.5)	14(15.9)	48(54.9)	17(19.5)
Frequent inter-health facility migration	-	-	-	88(100.0)	-
Harsh weather conditions	-	-	-	55(62.6)	33(37.4)
Level 2 health facilities in Bomet are not well-equipped	-	-	-	55(62.6)	33(37.4)

Barriers to treatment of asthma: All the respondents 100% (n=88) says that most health facilities are notequipped to treat and manage asthma conditions and majority 63.0% (n=56) says that diagnosis equipment such as spirometry is lacking. Also, majority of the respondent 59.6 (n=52) says they receive referral cases and strikingly, big number 64.4% (n=65) says no refresher trainings(Table 3). Majority says that other barriers that relate to the patients are distance to the health facility 67.9 (n=59) and cultural belief 64.6 (n=57). All the respondents say that inter-facility transfer and harsh weather conditions are barriers (Table 3).

DISCUSSION

Our finding shows that the health care workers have the capacity to treat and manage asthma conditions and this strongly suggest need for task shifting to enable physicians manage other complicated diseases. Task shifting has been demonstrated in The Democratic Republic of Congo, where shortage of physician was addressed by allowing of healthcare workers to perform duties of physicians(Joshi *et al.*, 2014). A review by Chochranehighlighted some of the benefits of task shifting which includeenhancing tuberculosis outcomes, promoting immunization, breastfeeding, lowering morbidity and mortality of children(Lewin *et al.*, 2010). As much as the impact of task shifting has been reported elsewhere, in Kenya, in nursing sector informal organic task shifting is underway without structured supervision (Nzinga *et al.*, 2019). The organic task shifting wasexecuted by delegating some less technical tasks to the subordinates(Nzinga *et al.*, 2019). The observations suggest that task shifting is in practice but it needs to be formalized considering lessons learnt elsewhere. For a successful task shifting, there is a need to have guidelines at the health facilities. Ourfindings show that health workers demonstrate practices that confirms the requirements of the approved guideline for treatment and management of asthma. However, guidelines were lacking in most of the health facilities. A research study carried out in Nigeria reported that many doctors were ignorant of asthma guidelines and treatedof patientswas based upon knowledge learnt at medical school or their experience with previous cases (Ayuk *et al.*, 2017). However, other study has shown that use of asthma guidelines by physicians could reduce emergency department visits and hospitalizations and hospital visits in the outpatient department thus saving an estimated $1.3 billion yearly (Al-Moamary *et al.*, 2012). The guideline is useful because it provides physician's perceptions on diagnosis, appropriate therapy, disease control surveillance and appropriate referral when necessary (Wechsler, 2009). Consequently, with no adherence or lack of guideline, there are several barriers observed. This study shows barriers such as, most health facilities are not equipped; lack of diagnostic equipment such as spirometry, lack of refresher training and most cases are referral. This is in agreement with previous studies which report that many health care professionals do not possess the knowledge to transfer the correct information on asthma to their patients (Ayuk *et al.*, 2017). This finding is similar to other research studies which have reported lack of devices and equipment for diagnosis and treatment of asthma as the barriers to the compliance to the approved guideline for treatment of asthma (Wahabi & Alziedan, 2012). This essentially explains the need of the implementation of guidelines for treatment and management of asthma to address the concern of knowledge and attitude, guideline related factors and lack of resources, organizational constraints, heavy workload, social norms etc (Rauh *et al.*, 2018). We note that this study was done in a county in rural settings and therefore the findings may not represent the situation in both urban and rural settings. Also, we have extensively pointed out task shifting for NCDs but we note that this must be interpreted with a lot of care as the capacity for treating and managing NCDs is very different. Other NCDs may need laboratory testing and also regular follow up that may overwhelm the already overloaded workforce at the primary health facilities.We further note that lack of the guideline in the facility does not mean that patients were not treated as per the guideline, this calls for further investigations.

CONCLUSION

This study shows that task shifting is possible with the current capacity of health care workforce but there are gaps that exists that relate to the facilities and patients. The study therefore provides an insight for developing a model of framework, which is relevant to the local settings or resource limited environment. The findings are therefore informing task shifting program for NCDs in general.

Consent for Publication: Not applicable for this manuscript.

Competing Interests: The authors declare that they have no competing interests.

Funding: This research was self-funded.

Authors Contribution: Joel Kimutai Rob, George Ayodo and Fred Amimo were involved in the conceptualization of the idea, data analysis and manuscript writing. Joel Kimutai was further involved in the collection of data, data entry, data cleaning, data analysis, interpretation of the results and drafting of the manuscript. Veronicah Knight and Lorine KemuntoKangwana were involved in data analysis and manuscript writing.George Ayodo and Fred Amimo were also involved in reviewing the interpretation of the results and the manuscript. Lastly, all authors approved the manuscript.

Acknowledgement: We express our heartfelt gratitude to the study respondents. Further, we are grateful to Jaramogi Odinga Oginga University of Science and Technology, School of Health Sciences for

providing a conducive working environment. We are also thankful to the County Health Management Team of Bomet County for providing us with the permission to carry out this study.

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