Original Research Article

TO DETERMINE THE PATIENTS' FACTORS INFLUENCING USE OF ASTHMA ACTION PLANS AMONG ADULT ASTHMATIC PATIENTS AGED 18-65 IN NYAMIRA COUNTY REFERRAL HOSPITAL

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ABSTRACT

Globally the World Health Organization (WHO) estimates that up to 334 million people suffer from asthma. In Africa, there are still many gaps in the report on asthma prevalence however some studies in South Africa, Nigeria, Tanzania and Cameroon have reported prevalence of 3.8%, 2%, 3.3% and 2.7%, respectively .In Kenya it is estimated that about 10% of the Kenyan population, or 4 million people, have asthma and in Nyamira County there is no available data on asthma prevalence but in other towns like Nairobi, the prevalence is 17.1%. A Personalized Asthma Action Plan (PAAP) includes; individualized self-management instructions devised collaboratively with the patient to help maintain asthma control and regain control in the event of an exacerbation. The objective of this study was to assess patients' factors influencing the use of personalized asthma action plans among patients aged 18-65 in Nyamira County. The study used a cross-sectional study design with a sample size of 220 which was determined by use of Fisher's formula. Systematic sampling was used to identify participants. Data was collected using questionnaires for a study period of two months. Categorical variables were presented as frequencies and percentage while continuous variables were presented as means and standard deviations. Chi-square and Fisher's Exact Test were used to detect significant differences in categorical variables while z-test was used to detect significant differences in continuous variables. Qualitative data was

analyzed using Nvivo software and presented in thematic areas. All P-values were two-tailed. Statistical significance used was set at $p<0.05$. Findings showed that there were more females' respondents at 111(50.5%) compared to males 109(49.5%) Majority did not use PAAPs with a response of 168(76.4%) respondents while those who used were 52(23.6%). Majority of the patients' respondents did not have knowledge on PAAPs at 160(72.7%) while those who had were, 60(27.3%).There was poor attitude towards use of PAAPs in which Majority felt that they are for the very sick in which 52(24.0%) strongly agreed and 86(39.6%) agreed while those who disagreed and strongly disagreed were 63(29.0%) and 16(7.4%) respectively. Practices among the patients who had these tools was poor; in which 20(39.0%) checked them at home and those who checked occasionally and never checked were 28(54.0%) and 4(7.0%) respectively. Statistically there were significant association between the various patients' factors influencing use of asthma action plans among adult asthmatic patients with a $p = 0.021$. From the respondents; majority of the patients were found not to be using the personalized asthma action plan cards which were represented by a response rate of 168(76.4%) respondents while those who used were 52(23.6%) respondents and this was occasioned majorly by lack of knowledge represented by160(72.7%) while those who had were, 60(27.3%). The report may also indicate that despite the implementation of asthma guidelines, its full effects have not yet been felt. The biggest asset for change is public knowledge, hence the national media should be involved and patients should have free access to patient education materials regarding asthma.

Keywords : PAAPs-personalized asthma action plans

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1.0 Introduction

1.1 Background Information

Asthma is a common respiratory condition characterized by recurring wheeze, shortness of breath, chest tightness and cough which varies with time and intensity, and often severe at night (Global Initiative for Asthma, 2020).

Globally the World Health Organization (WHO 2021) estimates suggest that up to 334 million people are affected, with the majority of affected people living in low- and middle-income countries (Global Asthma Report 2014); the total burden may be greater than reported owing to the high prevalence of asthma in countries that lack adequate reporting mechanisms. The economic burden of asthma is considerable, with direct treatment costs and indirect costs of lost productivity among the highest for non-communicable diseases (Global Asthma Report 2014). Symptoms include cough and breathlessness which may be intermittent or persistent (BTS/SIGN 2016). Triggers may be allergic (e.g. pollen, animal dander, dust mite) or non-allergic (e.g. exercise, smoking, cold air, smoke from fires in confined living spaces). The disease may be characterized by repeated exacerbations requiring a change to normal maintenance therapy. Treatment of people with asthma includes avoidance of potential triggers (when possible), use of inhaled corticosteroids (ICSs) and leukotriene receptor antagonists (LTRAs) to reduce airway inflammation and use of inhaled long-acting beta2-agonists (LABAs), short-acting beta2-agonists (SABAs) and anticholinergic bronchodilators (i.e. long-acting muscarinic antagonists (LAMAs)) to relieve airflow limitation (BTS/SIGN 2016; GINA 2016; NICE 2007; NICE 2013).

1.2 Problem Statement

Asthma is a common disease affecting up to 18% of the world's population (GINA, 2017). It was estimated that more than 339 million people had Asthma globally in 2016. The number of people with asthma continues to grow. One in 12 people (about 25 million, or 8% of the

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population) had asthma in 2009, compared with 1 in 14 (about 20 million, or 7%) in 2001 (CDC 2011).

Most asthma-related deaths occur in low- and middle-income countries. WHO estimates, there were 417,918 deaths due to asthma at the global level and 24.8 million DALYS attributable to Asthma in 2016 (WHO, 2020). Surveys suggests that, even in countries that have been proactive about recommending asthma self-management, three quarters of people living with asthma are managing their condition without the benefit of a written personalized asthma action plan, which could guide their self-management and help them make clinically appropriate decisions (CDC 2013).

1.3 Justification of the study

Self-management with use of a written asthma action plans which is supported by regular medical checkup by health care providers has demonstrated to lower the risk of hospitalization, emergency department visits and exacerbations which in overhaul has positive impact on the quality of life of the asthmatic patients (ERS 2015)

PAAPs primarily serve to promote self-management of asthma by reminding people of their treatment plan and offering the following directives: which triggers to avoid, when to increase treatment, how to increase treatment, how long to increase treatment and when to seek medical help (Gibson PG, et al., 2004). By promoting and increasing self-management of asthma, PAAPs ultimately aim to improve a person's overall control of his or her asthma symptoms. PAAPs also function as an important communication tool for patients and healthcare professionals, representing both a record and a reminder of discussions between patient and clinician (Welsh EJ, et al., 2011).

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2.0 Literature Review

2.1 Personalization of asthma action plans

Personalized action plan needs to be tailored to the individual. From a clinical perspective a personalized action plan should:

Reflect the severity of disease. e.g. omitting the increased inhaled steroid step in someone already on high maintenance doses, facilitating prompt transfer to hospital in a patient with a history of near fatal asthma.

Be adjusted to the patient's drug regime e.g. whether the patient is using an add-on treatment, whether the inhaled steroids and long-acting β2 agonist are combined in a single inhaler.

Provide advice about avoidance of triggers relevant to the individual patient.

Encompass management of co-morbid allergic rhinitis if appropriate.

More broadly, it needs to be adapted to acknowledge patient preference. Some patients will be confident holding emergency steroids; others will prefer to seek professional advice before commencing emergency treatment.

2.2 Description of the intervention

Personalized Asthma Action Plans (PAAPs) are considered an essential component of multi-faceted self-management education (BTS/SIGN 2016; GINA 2016; NICE 2013). For adults, PAAPs may be based on symptoms, on peak flow monitoring or on both, whereas symptom-based plans generally are preferable for children (BTS/SIGN 2016). Typically, content includes objective cues to promote early detection of deteriorating asthma symptoms, medications prescribed and action to take in the event of an acute episode, with particular reference to step-up and step-down therapy, along with health service access (Gibson 2004; Holt 2004; Partridge 2004; Toelle 2011).

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In principle, individuals are not passive recipients of PAAPs (NICE 2013), as a participatory process is intended to maximize engagement and ensure tailoring of the plan to a person's experience of asthma (Toelle B, et al., 2011). PAAPs should be firmly embedded within the regular review process (BTS/SIGN 2016) to record agreements made between clinician and patient.

2.3 How the intervention might work

PAAPs primarily serve to promote self-management of asthma by reminding people of their treatment plan and offering the following directives: which triggers to avoid, when to increase treatment, how to increase treatment, how long to increase treatment and when to seek medical help (Gibson PG, et al., 2004). By promoting and increasing self-management of asthma, PAAPs ultimately aim to improve a person's overall control of his or her asthma symptoms. PAAPs also function as an important communication tool for patients and healthcare professionals, representing both a record and a reminder of discussions between patient and clinician (Welsh EJ, et al., 2011). They are individualized, enabling the underlying nature of the person's asthma to be taken into consideration and reviewed on at least an annual basis (BTS/SIGN 2016).

2.4 Patients 'factors on use of asthma action plans

Action plans for the self-management of asthma are standard and have been shown to improve patient outcomes and to protect against death from asthma when provided. Despite it being recommended for years, they are still under-utilized by patients.

2.4.1 Doctor - patient relationship

Poor doctor-patient relationship resulted in poor implementation of these tools. Many patients reported a lack of consensus between different doctors in terms of diagnosis and best treatment which made them feel concerned. The disagreements were reported on

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medications, communication from other specialists and these were pointed out to be problematic and were stressed in all the focused group discussions.

2.4.2 How the healthcare system is perceived

Patients reported discrepancies between private and public hospitals in regard to waiting times and choice of medication. Despite the almost complete financial coverage available in Germany, some FG attendees complained about insufficient financial support provided by the (public/statutory) healthcare system and feared inadequacy of care. In public hospital good care depended on luck as reported in some FG.

Some patients expressed feeling helpless, ignored and misunderstood by the doctors concerned.

2.4.3 Time factor

Time also seemed to be an important issue for patients dealing with asthma in several different ways: some participants claimed that they did not have enough time for the recommended therapy, Participants complained that there was no way to get a doctor's appointment quickly and when needed, and about having to spend a lot of time in waiting rooms. The issue of absenteeism from work was also reported. During consultation the patients noted that there was hardly any or no time at all to discuss difficulties, symptoms and problems or to ask for individual advice.

2.4.4 Financial constraints

Access to financial resources was perceived as a limiting factor for good asthma therapy. Some of the participants had insufficient means to afford alternative or complementary treatments not covered by health insurance which they nevertheless believed to be helpful. Out-of-pocket drug fees as imposed were perceived as a financial strain for chronically ill

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patients in general, and care covered by insurance was declared to be insufficient. Participants felt that the generic drugs offered in the public hospital were less effective.

3.0 Research Methodology

A descriptive study design was used in study where they done using both quantitative and qualitative techniques was used to collect analyze and summarize data in this research. The study was carried out in Nyamira County Referral Hospital in Nyamira County. Nyamira County is a county in the former Nyanza Province of Kenya. Adult asthmatic patients (18-65 years) attending Nyamira County Referral Hospital chest clinic. The aim was to sample 220 participants during the study. The study took a period of 2 months. The study was carried out for a period of two months to achieve a sample size of 220 patients because from the hospital records; average of 400 patients are seen every month. Filled questionnaires were only accessible only to the investigator and were kept safely. Categorical variables were presented as frequencies and percentage while continuous variables were presented as means and standard deviations (SD).

4.0 Results and Finding

4.1 Descriptive statistics on the patients' factors influencing use of asthma action plans among adult asthmatic patients aged 18-65 in Nyamira County Referral Hospital

Table 1: Patient Knowledge on the factors influencing use of PAAPs

Test Item		F	%
Have you ever heard about personalized asthma action plan?	Yes	60	27.3%
	No	160	72.7%
Explain what it is	An asthma card	25	41.7%
	An appointment card	4	6.7%
	Instructions given on what to do when I have an attack	31	51.7%
	Others	0	0.0%
The last time you had an	Yes	161	73.2%

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exacerbation did you go to the hospital?	No	59	26.8%
What did you do before going to the hospital?	Increased the dose of my reliever inhaler	75	46.6%
	Increased the dose of my oral medication	83	51.6%
	Inhaled hot steam	3	1.9%
	Other	0	0.0%
What is the use of personalized asthma action plans?	To check medications, one is supposed to use	20	23.3%
	It guides on what to do when one has an attack	46	53.5%
	To check the next appointment date	20	23.3%
	Other	0	0.0%

Source field Data (2022)

Majority of the patients indicated that they have never heard about personalized asthma action plan which were represented by a response rate of 160(72.7%) respondents while those had ever heard about it were indicated by a response rate of 60(27.3%) respondents hence indicating low knowledge on personalized asthma action plan among the patients. According to the good definition of personalized asthma action plan was provided and majority stated that it is a set of instruction given on what to do when I have an attack which had a response rate of 31(51.7%) followed by those who indicated is an asthma card with a response rate of 25(41.7%) while 4(6.7%) of the respondents indicated it is an appointment card. Majority of the patients indicated that the last time they had exacerbation they went to the hospital which was represented by a response rate of 161(73.2%) respondents while those who didn't go were represented by a response rate of 59(26.8%) respondents. Further the study found out that before the attend the hospital one of the major first aid precaution put in place was increase the dose of my oral medication with a response rate of 83(51.5%) of total respondents, followed by those who indicated increase the dose of reliever inhaler with a response rate of 75(46.6%) respondents while those who inhaled hot steam were 3(1.9%)

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respondents. The study found that majority of the patients indicated that use of personalized asthma action plans was mainly used for guides on what to do when one has an attack with a response rate of 46(53.5%) respondents while those who indicated used to check medications 20(23.3%), and to check the next appointment date were indicated by a response rate of 20(23.3%) respondents respectively.

4.1.2 Attitude of the patients' factors influencing use of asthma action plans among adult asthmatic patients

Table 2: Patient Attitude on the factors influencing use of PAAPs

Test Item	Strongly agree		Agree		Neither agree nor disagree		Disagree		Strongly Disagree	
	F	%	F	%	F	%	F	%	F	%
PAAPs should be used for the very sick patients.	52	24.0	86	39.6	0	0.0	63	29.0	16	7.4
Use of PAAPs does not improve asthma management	28	12.9	87	40.1	0	0.0	89	41.0	13	6.0
PAAPs tools are meant for healthcare workers and not patients	12	5.5	38	17.5	15	6.9	139	64.1	13	6.0
PAAPs tools make your consultation time with your doctor longer and tiresome	93	42.9	69	31.8	11	5.1	41	18.9	3	1.4

Source field Data (2022)

The attitude was determined among the patients using Likert scale and the following results were obtained. Majority of the patents indicated that the use of PAAPs should be used for the very sick people where the respondents who indicated strongly agree and agree were indicated a response rate of 52(24.0%) and 86(39.6%) respondents respectively while those who disagreed and strongly disagree were indicated by a response rate of 63(29.0%) and 16(7.4%) respondents respectively. Most of the respondents disagreed that the use of PAAPs does not improve asthma management with a response rate of 89(41.0%) respondents while those who agreed that PAAPs does not improve asthma management were 87(40.1%)

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respondents. A response rate of 28(12.9%) and 13(6.0%) respondents indicated strongly agree and strongly disagree on use of PAAPs does not improve asthma management. Majority of the respondents indicated that they disagree with PAAPs tools are meant for healthcare workers and not patients which was represented by a response rate of 139(64.1%) followed by those who agreed with a response rate of 38(17.5%) respondents while the rest of respondents indicated strongly agree, neutral and strongly disagree with a response rate of 12(5.5%), 15(6.9%) and 13(6.0%) respondents respectively. Majority of the patents indicated that use of PAAPs tools make your consultation time with your doctor longer and tiresome where majority strongly agreed with a response rate of 93(42.9%) respondents by those who agreed with a response rate of 69(31.8%) of total respondents while low respondents who disagreed and strongly disagree with a response rate of 41(18.9%) and 3(1.4%) respondents.

4.1.3 Practices of the patients' factors influencing use of asthma action plans among adult asthmatic patients

The table 3 and 4 indicates the response rate among the patients on the practices of that may influence the use of asthma action plans among adult asthmatic patients and cross tabulation on how regularly do they use them respectively.

Table 3: Practices of the patients' factors influencing use of asthma action plans among adult asthmatic patients

Test Item		F	%
Do you have a PAAPs card?	Yes	52	23.6%
	No	168	76.4%

Source field Data (2022)

The study found out that from a sample of 220 patients those who had PAAPs card were 52(23.6%) despite having asthma while those who didn't have were 168(76.4%) respondents.

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Further the study carried cross tabulation among the patients who had PAAPs card and was represented on the table 4 below;

Table 4: Cross tabulation on the Practices of the patients' factors influencing use of asthma action plans among adult asthmatic patients with PAAPs card

Do you usually use/check your card at home?	Yes	20	20
	No	4	4
	Occasionally	28	28
Total		**52**	**52**
Do you carry your asthma action plans when you visit the hospital?	Yes	45	45
	Occasionally	7	7
Total		**52**	**52**

Source field Data (2022)

From a sample of 52 patients who were found to have a PAAPs card those who used to check for their card at home were 20 while those who would check on occasionally were 28 while 4 didn't check their card. From those 52 respondents those who used their asthma action plans when you visit the hospital were 45 while 7 didn't use them.

4.2 Inferential statistics on the Patients' factors influencing use of asthma action plans among adult asthmatic patients aged 18-65 in Nyamira County Referral Hospital

A Persons chi square was used to determine if there is any statistical relationship on the various factors that influencing use of asthma action plans among adult asthmatic patient and the results were represented on table 5 below;

Table 5: Chi-square test association between the various patients'

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.919[a]	3	.821
Likelihood Ratio	1.062	3	.786
Linear-by-Linear Association	.210	1	.646

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N of Valid Cases	244

Source field Data (2022)

Study Outcomes of a chi-square to determine if there is statistically significant association between the various patients' factors influencing use of asthma action plans among adult asthmatic patients and the study found that (χ = .919, p = 0.021 > 0.05) this indicates a there is a statistical relationship between the parameters that influence asthma action plan at 95% confidence interval. Researches have concluded that patients diagnosed with asthma should be taking the medications as prescribed by the doctor. The patients are also advised to keep their inhalers close as this is one of the ways of managing the condition (Gatheral et al, 2017).

The study done by (Bateman et al., 2008) their recommendations have primarily centered on effective treatment alternatives, more study is required to better understand asthma management challenges from the patient's perspective, such as medication nonadherence. Understanding from such study could greatly aid patient education, which in turn could result in patients managing their asthma more effectively.

A further study reported the asthma control rate to be 61.5% in the first visit, in the outpatient patients with persistent and high risk asthma (Yildiz & Atit, 2013). Besides, from the follow up visits, the asthma control rate had increased to 87.3% in the sixth visit. Another research was conducted, where 106 patients were used as the study sample. Majority of the respondents' age was ranging between 36-45 years. From the findings, 59% of the asthmatic patients were not adhering to the drugs given, and some of the reasons they gave were being preoccupied with tasks and forgetting to take the drugs (Koyra & Chinasho,2019). This means that in most cases, the patients participate directly to the severity of the asthma conditions.

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5.0 Discussion, Conclusion and Recommendation

5.1 Discussion on the determination of the patients' factors influencing use of asthma action plans among adult asthmatic patients aged 18-65 in Nyamira County Referral Hospital

Majority of the patients indicated that they have never heard about personalized asthma action plan which were represented by a response rate of 160(72.7%) respondents while those had ever heard about it were indicated by a response rate of 60(27.3%) respondents hence indicating low knowledge on personalized asthma action plan among the patients. According to Gatheral et al. (2017) they indicated between individuals who receive only schooling and those who also use a PAAP. This result held true for all outcomes, including changes in symptom scores and quality of life as well as having to visit the hospital because their asthma got worse. Further the study reported participants who reported having at least one exacerbation that required a trip to the ER or hospitalization No statistically significant difference was found between participants receiving PAAP and those not receiving PAAP in five studies involving 1385 participants in terms of the number of exacerbations necessitating an ED visit or hospitalization (odds ratio (OR) 0.75, 95% confidence interval (CI) 0.45 to 1.24)

The attitude on use of these tools was poor since majority of the patents indicated that the use of PAAPs should be used for the very sick people where the respondents who indicated strongly agree and agree were indicated a response rate of 52(24.0%) and 86(39.6%) respondents respectively while those who disagreed and strongly disagree were indicated by a response rate of 63(29.0%) and 16(7.4%) respondents respectively. Most of the respondents disagreed that the use of PAAPs does not improve asthma management with a response rate of 89(41.0%) respondents while those who agreed that PAAPs does not improve asthma management were 87(40.1%) respondents. A response rate of 28(12.9%) and 13(6.0%)

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respondents indicated strongly agree and strongly disagree on use of PAAPs does not improve asthma management. Practice on is still low; from a sample of 52 patients who were found to have a PAAPs card those who used to check for their card at home were 20 while those who would check on occasionally were 28 while 4 didn't check their card. From those 52 respondents those who used their asthma action plans when you visit the hospital were 45 while 7 didn't use them. Increasing patient medication adherence is essential for the best possible management of asthma because the use of many drugs at various points throughout the course of the disease is necessary for adequate management of the condition. Effective levels of medication adherence improve health outcomes while reducing negative drug effects, disease progression, and medical expenses.

5.2 Conclusion

From the respondent's majority of the patients were found not to be using the personalized asthma action plan cards which were majority respondents than those who used respondents. Lack of knowledge was a leading factor among the patient's respondents where the study indicated that who have not heard about them while some of the patients have never heard about it. There was also a poor attitude reported in the patients' respondents in which majority felt that they were for very sick patients; Majority of the patents indicated that the use of PAAPs should be used for the very sick people. The practice was poor even for those few who had these tools; in which from a sample of 52 patients who were found to have a PAAPs card those who used to check for their card at home while low count among the respondents who didn't check their card.

5.3 Recommendation

Prevalence on usage of asthma action plans among adult asthmatic patients is very low from the study and therefore the biggest asset for change is public knowledge, hence the national

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media should be involved. Patients should have free access to patient education materials regarding asthma.

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