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Self-care practice and associated factors among adult asthmatic patients on follow up care at public hospitals in East Wollega zone, West Ethiopia: a cross-sectional study, 2025

Demiso Geneti , Lammi Bayisa, Getu Mosisa

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School of Nursing and Midwifery, Institutes of Health Sciences, Wollega University, Nekemte, Ethiopia

Correspondence to
Demiso Geneti;
demisogeneti19@gmail.com

ABSTRACT

Objectives This study aimed to assess self-care practices and the factors associated with them among adult asthmatic patients receiving follow-up care at public hospitals in the East Wollega Zone of West Ethiopia in 2023.

Design A cross-sectional study conducted in an institutional setting.

Setting The research was carried out in government hospitals, including two primary hospitals, one general hospital and two comprehensive specialised hospitals, from 29 May to 29 July 2023.

Participants A systematic random sample of 413 adult asthmatic patients undergoing follow-up care at public hospitals in the East Wollega zone was selected. Data were collected using a structured, self-administered questionnaire, which was then entered into Epidata V.4.6 and analysed using SPSS V.27.

Outcome measures The primary outcome measure was the classification of asthma self-care practices as either good or poor.

Results The findings revealed that 51.6% (95% CI: 46.7% to 56.4%) of participants exhibited good asthma self-care practices. Significant factors associated with good self-care included the absence of comorbidities (adjusted OR (AOR) 2.0, 95% CI: 1.26 to 3.10), non-consumption of alcohol (AOR 4.33, 95% CI: 2.52 to 7.44), non-smoking status (AOR 6.67, 95% CI: 2.46 to 18.1) and the presence of social support (AOR 1.57, 95% CI: 1.00 to 2.48).

Conclusion The study found a relatively high prevalence of good asthma self-care practices among participants. Key factors positively associated with these practices included the absence of comorbidities, non-consumption of alcohol and tobacco and strong social support. It is recommended that public hospitals and healthcare management implement strategies to promote behavioural changes and enhance self-care education aimed at reducing asthma exacerbation triggers.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This study was carried out across all hospitals located in the East Wollega zone as a multicentre investigation.
⇒ The research employed face-to-face interview techniques, resulting in a 100% response rate.
⇒ A limitation of this study is the potential for participant response bias, which may lead to an overestimation or under-reporting of self-care practices.
⇒ The reliance on self-reported data may introduce inaccuracies, as participants might not accurately remember their asthma self-care practices.
⇒ A qualitative design, which could have strengthened the findings of this cross-sectional study, was not used.

INTRODUCTION

Asthma is a heterogeneous disease typically characterised by chronic inflammation of the airways. It is defined by early respiratory symptoms, including wheezing, dyspnoea, chest tightness and cough, which can vary in frequency, intensity and expiratory airflow limitation.[1] Currently, approximately 300 million people worldwide suffer from asthma, with projections indicating an increase of about 100 million cases by 2025. Asthma is responsible for around 250 000 deaths globally, and more than 30 million individuals in the USA have been diagnosed with the condition at some point in their lives.[2] In Africa, countries such as the Democratic Republic of the Congo exhibit notably high asthma prevalence rates, estimated at 6.9%.[3] In Ethiopia, asthma represents one of the most significant public health challenges, contributing to both morbidity and mortality related to respiratory diseases.[4] The prevalence of asthma has risen in recent decades due to various factors, including smoking, occupational hazards, pest infestations in households, economic status, residential environment and family history of asthma.[5] Asthma self-care practices encompass a range of actions that individuals with asthma can undertake to effectively manage their

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condition, reduce symptoms and enhance their quality of life. This includes making lifestyle changes, educating themselves about asthma and adhering to prescribed medications.[6]

Self-care has become a crucial aspect of managing chronic illnesses, as it is closely linked to a range of positive outcomes for these patients.[7] According to the Middle Range Theory of Self-Care practice of Chronic Illness, self-care is defined as a set of behaviours aimed at promoting overall health and ensuring adherence to treatment (self-care maintenance), being mindful of one's body and recognising symptoms (self-care monitoring) and responding appropriately to signs and symptoms as they arise (self-care management).[8 9]

Asthma self-care practices are strategies designed to manage asthma symptoms and minimise the risk of future exacerbations.[10] Self-care practices play a crucial role in managing asthma as they enhance knowledge, decrease hospitalisations, improve quality of life, prevent exacerbations and are cost-effective.[11] A study conducted in Iraq, USA and Saudi Arabia found that asthmatic patients visiting hospitals demonstrate inadequate self-care practices regarding disease characteristics, management of triggering factors, information received from healthcare professionals and behavioural factors.[12–14]

A study conducted in the northern region of Ethiopia found that a significant percentage (57.3%) of asthmatic patients visiting government public hospitals exhibit poor self-care practices. This inadequacy not only contributes to the rising economic costs associated with poorly managed asthma but also significantly impacts daily activities, resulting in physical, emotional and social limitations that ultimately diminish quality of life.[15]

The poor implementation of clinical practices can be attributed to various factors, including those related to patients, healthcare professionals and organisational aspects. Notably, older age, comorbid conditions, anxiety, lack of social support and alcohol consumption have been identified as significant contributors to this issue.[15] The government of Ethiopia has decentralised the management of non-communicable diseases, including asthma, by providing training to nurses at both hospitals and health centres. This training focuses on how to identify and manage patients before they enter a clinical setting.[16] The implementation of this policy is crucial for preventing asthma complications, effectively managing the condition and fostering a positive attitude towards self-care practices in asthma management.[15] Although there are recommendations for self-care practices, their implementation has not been extensively studied. Consequently, this research aimed to evaluate self-care practices and the factors associated with them among asthmatic patients receiving follow-up care in public hospitals in East Wollega, West Ethiopia.

METHODS

Study setting and period

This study was conducted among adult asthmatic patients attending public hospitals in East Wollega, Ethiopia, from 29 May to 29 July 2023. The East Wollega zone includes five hospitals: Wollega University Referral Hospital, Nekemte Comprehensive Specialized Hospital, Gida Ayana General Hospital, Arjo Primary Hospital and Sire Primary Hospital. Wollega University Referral Hospital and Nekemte Comprehensive Specialized Hospital are located in Nekemte city, the capital of East Wollega zone. Gida Ayana General Hospital is situated in the northern part of Nekemte town, Arjo Primary Hospital is located in the west and Sire Primary Hospital is located in the south. Approximately 903 adult asthmatic patients are receiving follow-up care across these hospitals, with 234 patients at Wollega University Referral Hospital, 241 at Nekemte Comprehensive Specialised Hospital, 258 at Gida Ayana General Hospital, 95 at Arjo Primary Hospital and 75 at Sire Primary Hospital, respectively.

Study design

An institution-based cross-sectional study design was employed.

Source and study population

The source population consisted of all adult asthmatic patients receiving follow-up care at public hospitals in East Wollega zone. The study population included those patients who received follow-up care at the selected hospitals during the data collection period.

Inclusion and exclusion criteria

Adult asthmatic patients who visited public hospitals in East Wollega zone and had been receiving follow-up care for at least 6 months prior to the data collection period were included in the study. Patients with mental health issues that hindered verbal communication were excluded.

Sample size and sampling procedure

The sample size was determined using the single population proportion formula through the Epi Info StatCalc programme, based on a 95% CI, a 5% margin of error and a 42.3% proportion (p) of good asthma self-care practices from a previous study conducted in the Amhara region of Northern Ethiopia[15]; the formula used was: $n = z^2 \frac{P\ (1-P)}{d2}$.

Based on these assumptions, the estimated sample size was calculated to be 375. To account for a 10% non-response rate, the final sample size was adjusted to 413. This sample was proportionally allocated to each hospital based on patient flow data from the outpatient department over the previous 3 months. A systematic random sampling technique was employed to select study participants

The total number of adult asthmatic patients who attended the follow-up clinic in the previous 3 months

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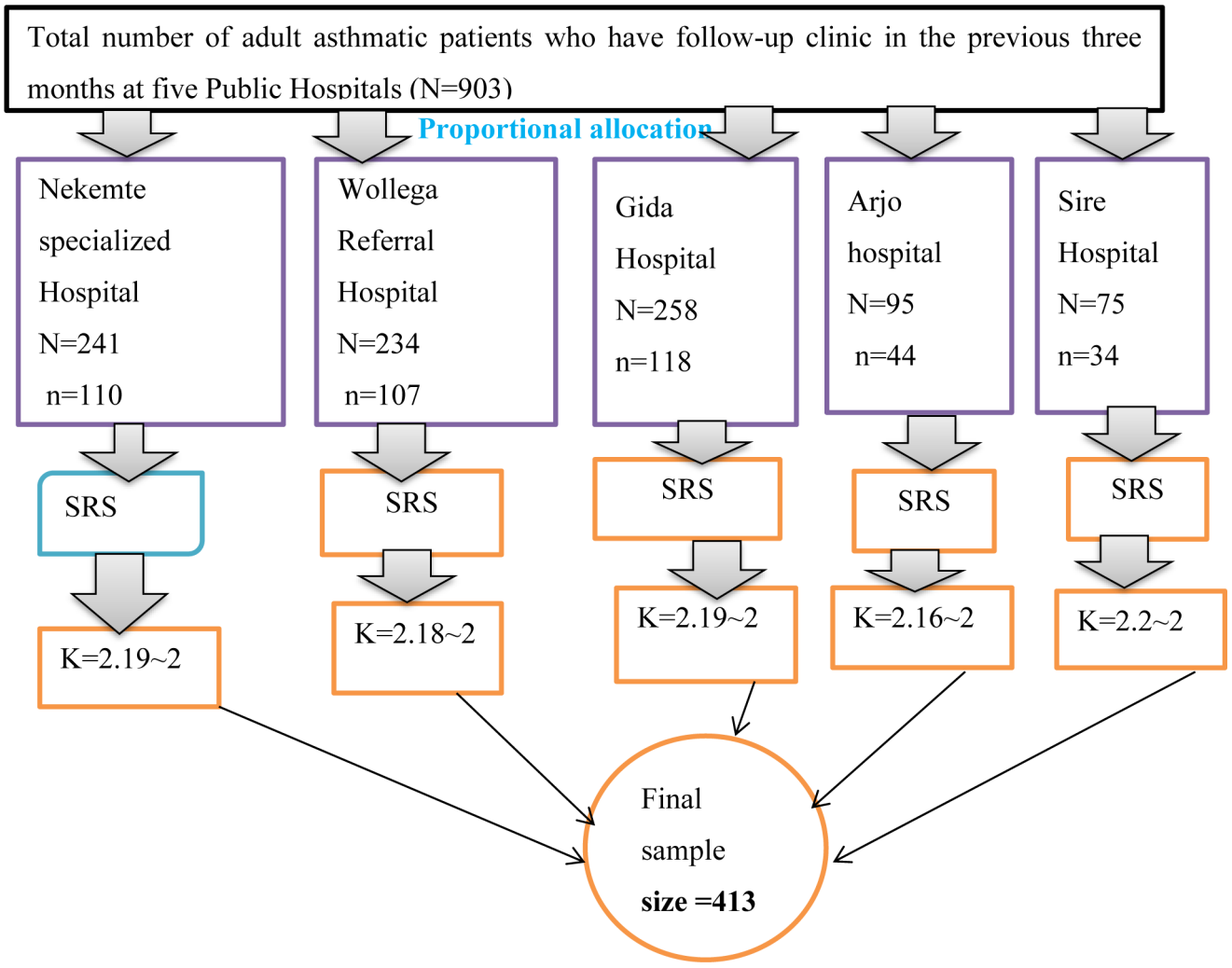

Figure 1 Schematic presentation of proportional allocation of the sample size for each public hospital in East Wollega Zone, West Ethiopia, 2023. SRS, Systematic Random Sampling.

across all five hospitals served as the sampling frame. With a total of 903 patients identified, a list of potential participants was created and coded. The sampling interval was calculated to be approximately two for each hospital. The first participant was selected randomly using a lottery method, and subsequently, every second patient on the list was interviewed. Data collection occurred when study participants came to the outpatient department for follow-up care as per their appointments with healthcare providers (figure 1).

Dependent variable

Self-care practice of asthmatic patients.

Independent variables

Sociodemographic characteristic

Age, sex, marital status, occupation, residence and education, income.

Behavioural, attitude and knowledge related factors

History of cigarette smoking, history of alcohol consumption, physical exercise, social support, depression and anxiety, knowledge about asthma self-care practice and attitude towards asthma.

Clinical related factors

History of comorbidity, exacerbation factors, history of hospital admission, duration of treatment, age diagnosed for asthma, presence of exacerbation in past 12 months and family history of asthma.

Operational definitions

Self-care practices refer to actions or tasks that people take on their own behalf to promote self-care, lessen asthma attacks and cope with illness.[17]

Good self-care practice is when participants who scored above or equal to the mean according to the self-care practice questionnaire are considered as good asthma self-care practice, and poor self-care practice is when participants who scored below the mean according to the self-care practice questionnaire are considered as poor asthma self-care practice.[18]

Comorbidity is any chronic disease the patient has together with asthma, for he/she is taking medications.[19]

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Good knowledge is when participants who scored greater than or equal to the mean of knowledge-related questions are categorised as having good knowledge, and poor knowledge is when participants who scored below the mean of knowledge-related questions are considered as having poor knowledge.[20]

Social support is when participants who scored above or equal to the mean from multidimensional social support questions were referred to as having social support, and those who scored below the mean were considered as having no social support.[21]

Anxiety and depression are when participants who scored between 0–7, 8–10 and 11–21 are taken as having normal, borderline and abnormal among anxiety and depression questions, respectively.[22]

Positive attitude is when participants who scored above or equal to the mean from attitude-related questions, and negative attitude is when participants who scored above or equal to the mean from attitude-related questions.[23]

Alcohol drinking is defined as the use of any type of alcohol-based beverage, whether locally produced or manufactured in industries, by the participant/s in any volume regularly ranging from days to months. Occasional intakes for holidays, ceremonies and intakes with a longer than monthly interval were ignored.

Cigarette smoking is described as the habitual use of tobacco, whether locally produced or made in factories, by the participant/s on a daily, weekly, or monthly basis in any form or volume.

Exercise is a type of physical activity consisting of planned, structured and repetitive movements done to improve or maintain physical fitness. For example, walking, gymnastics, walking, jumping, etc.

Data collection tool and procedure

Data collection for this study was conducted through face-to-face interviews using a structured questionnaire. The questionnaire was adopted from the relevant literature and standardised tools designed to assess asthma self-care practices and associated factors among adult asthmatic patients receiving follow-up care.[18 20–22 24] The original questions were prepared in English and subsequently translated into Afaan Oromo by experts fluent in both languages. To ensure consistency and accuracy, the translated questionnaire was then translated back to English, allowing researchers to verify that the meaning of the questions remained intact. The structured questionnaire consisted of four main parts:

Part one

Demographic variables: This section collected information on participants' age, sex, marital status, residence, ethnicity, educational status and occupational status. These variables were essential for understanding the demographic profile of the study participants.

Part two

Clinical related factors: This section assessed various clinical factors including: age at which patients were diagnosed with asthma, presence of other comorbidities, identified triggering factors for asthma attacks, history of hospital admissions due to asthma, duration of asthma treatment, presence of exacerbating factors in the past 12 months, family history of asthma and duration of illness.

Part three

Knowledge, attitude and behavioural factors: this part focused on assessing participants' knowledge, attitudes and behaviours related to asthma management

Social support: social support was measured using the Multidimensional Scale of Perceived Social Support (MSPSS), which consists of 12 items designed to evaluate perceived social support from family, friends and significant others.[21] Participants rated each item on a five-point scale, where 1=very strongly disagree, 2=strongly disagree, 3=neutral, 4=strongly agree and 5=very strongly agree. The total score for the MSPSS ranged from 12 to 60, calculated by summing the scores of all items. Participants who scored equal to or above the mean were classified as having social support, while those scoring below the mean were considered to have no social support.[18]

Anxiety and depression levels were assessed using the Hospital Anxiety and Depression Scale, which consists of 14 items. Scores were interpreted as follows: 0–7 indicated normal levels, 8–10 indicated borderline levels and 11–21 indicated higher levels of anxiety and depression, respectively.[18 22]

Knowledge regarding asthma self-care was measured using the Knowledge of Asthma Self-Care Questionnaire, which consisted of items scored from 0 to 16. Each question had multiple-choice options labelled from A to E, with correct answers receiving a score of 1 and incorrect answers a score of 0. Participants scoring equal to or above the mean on knowledge-related questions were categorised as having good knowledge, while those scoring below the mean were classified as having poor knowledge.[20]

Participant Attitude Questionnaire included five items rated on a scale from 1 to 5 (1=strongly disagree; 5=strongly agree). Participants scoring above the mean on these attitude-related questions were classified as having a positive attitude, whereas those scoring below the mean were considered to have a negative attitude.[23]

Part four

Asthmatic self-care practice: the Asthma Self-Care Practice Questionnaire comprised eight items. Participants rated their self-care practices on a four-point Likert scale: 1=never perform, 2=sometimes perform, 3=frequently perform and 4=always perform. The total score ranged from 8 to 32, calculated by summing the scores for each item. Participants scoring equal to or above the mean were deemed to have good asthma self-care practices, while those scoring below the mean were categorised as

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having poor asthma self-care practices.[15 18] The tool was validated, and the pretest was conducted to assess its clarity before the main data collection began.

Data collection procedures

Data collection was carried out by five BSc nurses under the supervision of two BSc nurses who had been trained in asthma self-care practices and associated factors among adult patients receiving follow-up care. Patients attending the asthma clinic who met the inclusion criteria were approached to participate in the study. The data collectors were overseen by the principal investigator and two supervising nurses.

Data quality control

A pretest involving 5% of the sample size (21 participants) was conducted at Shambu General Hospital in Horro Guduru Wollega. This pretest evaluated the questionnaire for clarity, simplicity, understandability, consistency, coherence and applicability.

A reliability test using Cronbach's alpha was performed to assess internal consistency: 82% for asthma self-care practices, 91% for social support, 73% for anxiety and depression, 72% for knowledge of asthma self-care management and 92% for attitudes towards asthma self-care practices. A 1-day training session was provided for both data collectors and supervisors prior to actual data collection, covering questionnaire content, confidentiality maintenance, participant engagement techniques and privacy considerations. Daily reviews of completed questionnaires were conducted by the principal investigator and supervisors to ensure completeness, accuracy and clarity.

Data processing and analysis

The data were coded, verified for completeness, cleaned and entered into EpiData V.4.6 before being exported to SPSS V.27 for analysis. Descriptive statistics were employed to characterise the variables. The outcomes of the descriptive analysis were presented as frequencies, tables, percentages, means with SD, medians with IQRs and ranges. The outcome variable was categorised into two groups: good and poor, based on the analysed mean scores. A binary logistic regression analysis was conducted to examine the associations between the outcome variable and each explanatory variable. Independent variables with a p value <0.25 were selected as candidates for multivariable logistic regression analysis. Following this, multivariable logistic regression was performed, and the statistical significance of the associations between variables was assessed using ORs with a 95% CI, where a p value <0.05 was deemed statistically significant. The backward likelihood ratio method was employed to identify independent predictors of asthmatic self-care. The model's goodness of fit was evaluated using the Hosmer-Lemeshow test, which yielded a value of 0.887. Additionally, multicollinearity was assessed using tolerance and the Variance Inflation Factor (VIF). There was no evidence of severe multicollinearity among the independent variables, as the VIF values ranged from 1.074 to 1.237, and tolerance values ranged from 0.802 to 0.932.

Consent to participate

A formal letter of cooperation was prepared and submitted to the public hospitals in the East Wollega Zone. Permission to conduct the study was subsequently granted by the medical director of each hospital. Participants were provided with a comprehensive overview of the study's objectives and instructed on how to complete the questionnaire. They were assured that all information would be treated with the utmost confidentiality. Written informed consent was obtained from each participant prior to their involvement in the study.

Patient and public involvement

Patients and the public were not involved in the design, conduct, reporting, interpretation or dissemination plans of our research. They were not invited to contribute to the writing or editing of this document for clarity or accuracy. However, patients and the community played a role in selecting the research topic as a priority issue. They will also be engaged in disseminating the results and during interventions addressing the identified gaps.

Dissemination

The findings of this study will be shared with Wollega University, the East Wollega Zonal Health Office, the five selected hospitals and other relevant organisations. Additionally, the results will be published in a peer-reviewed journal.

RESULTS

Sociodemographic characteristics of the study participants

A total of 413 participants took part in the study, achieving a 100% response rate. The median age of the participants was 44 years, with an IQR of 35–57 years. Among the participants, 182 (44.1%) were aged between 35 years and 54 years. The gender distribution indicated that 220 (53.3%) of the participants were men. The majority, 239 (57.9%), were married. More than half of the respondents, 219 (53%), identified as Protestant. In terms of ethnicity, the vast majority, 370 (89.6%), belonged to the Oromo ethnic group. Additionally, 241 (58.4%) lived in urban areas. Regarding educational attainment, approximately 124 (30%) were unable to read and write, while 121 (29.3%) identified as farmers. The median monthly household income was 900 Ethiopian Birr (ETB), with an IQR of 400–2650 ETB (table 1).

Clinical characteristic of the study participants

Regarding the clinical characteristics of the study participants, nearly half, 198 (47.9%), were diagnosed with asthma between the ages of 25 years and 49 years. Approximately 136 (32.9%) participants reported having asthma for a duration of 2–5 years. Additionally, about 170 (41.2%) participants had a family history of asthma.

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Table 1 Sociodemographic characteristics of adult asthmatic patients at public hospitals in East Wollega zone receiving follow-up care OPD, Western Ethiopia, 2023 (n=413)

Variables	Categories	Frequency	Per cent
Sex	Male	220	53.3
	Female	193	46.7
Age groups (years)	18–34	100	24.2
	35–54	182	44.1
	≥55	131	37.1
Marital status	Single	100	24.2
	Married	239	57.9
	Divorced	40	9.7
	Widowed	34	8.2
Religion	Orthodox	135	32.7
	Muslim	59	14.3
	Protestant	219	53
Ethnicity	Oromo	370	89.6
	Amhara	29	7
	Others*	14	3.4
Residence	Urban	241	58.4
	Rural	172	41.6
Educational status	Unable to read and write	124	30
	Primary school	89	21.5
	Secondary school	111	26.9
	College and above	89	21.5
Occupational status	Student	58	17
	Daily labour	65	15.7
	Farmer	121	29.3
	House wife	58	14
	Merchant	56	13.6
	Civil servant	55	13.3
Average monthly income (ETB)	≤1000	242	58.6
	1001–2000	56	13.6
	2001–3000	23	5.6
	3001–4000	20	4.8
	≥4001	72	17.4

**Tigire, Gurage, Gumuz.
ETB, Ethiopian Birr; OPD, Outpatient Department.

Among the participants, 161 (39%) had comorbid conditions, with 53 (12.8%) specifically diagnosed with hypertension. Approximately three-quarters of the participants, 286 (69.2%), experienced frequent asthma exacerbations in the past year. Less than half, 151 (36.6%), had been hospitalised in the last 12 months, with 42 (27.8%) of those admissions attributed to asthma. Furthermore, the majority of participants, 350 (84.7%), experienced asthma trigger factors (table 2).

Table 2 Clinical characteristics of adult asthmatic patients at public hospitals in East Wollega zone receiving follow-up OPD, West Ethiopia, 2023 (n=413)

Variables	Categories	Frequency	Per cent
Age at asthma diagnosis (year)	<25	166	40.2
	25–49	198	47.9
	≥50	49	11.9
Duration living with asthma (year)	<2	73	17.7
	2–5	136	32.9
	6–10	105	25.4
	11–20	70	16.9
	>20	29	7.0
Family history of asthma	Yes	170	41.2
	No	243	58.8
History of comorbidity	Yes	161	39.0
	No	252	61.0
Types of comorbidity	Heart failure	25	15.5
	Diabetes mellitus	29	18
	Renal disease	33	20.5
	Hypertension	53	33
	Others**	21	13
History of asthma exacerbation in the last 12 months	Yes	286	69.2
	No	127	30.8
History of admission to hospital in last 12 months	Yes	151	36.6
	No	262	63.4
If yes, cause of admission	Asthma	42	27.8
	Others***	109	72.2
Triggering factors which exacerbate asthma attacks	Yes	350	84.7
	No	63	15.3

Sinusitis, pneumonia, and diabetus mellitus, * Heart failure, Hypertension, chronic bronchitis, pneumonia.
OPD, Outpatient Department.

Knowledge, attitude and behaviour characteristics of the study participants

Out of the participants, 112 (27.1%) reported having consumed alcohol at some point in their lives, with 57 (50.9%) of these individuals currently drinking alcohol. Additionally, 54 (12.1%) of participants were former cigarette smokers and among them, 31 (57.4%) were currently smoking more than eleven cigarettes per day. Furthermore, a substantial majority, 348 (84.5%), engaged in regular physical exercise.

Regarding social support, half of the study participants, totalling 207 (50.1%), reported having no social support. Additionally, a significant portion of the participants experienced mental health challenges, with approximately

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78.7% reporting anxiety and 54.7% indicating symptoms of depression. The study also found that 155 participants (37.5%) had poor knowledge about asthma self-care practices. Moreover, less than half of the participants, specifically 147 (35.6%), held negative attitudes towards asthma self-care practices (table 3).

Proportion of asthma self-care practice

Among the 413 study participants, 213 (51.6%) had asthma good self-care practice with 95% CI (46.7 to 56.4) (figure 2).

Factors associated with self-care practice

Bivariable logistic regression was employed to examine the relationship between each independent variable and the outcome variable (asthma self-care practice). Variables demonstrating an association with a p value <0.25 were subsequently included in the multivariable logistic regression model. In the binary logistic regression analysis, the following variables were identified as candidates for the multivariable model: residence, comorbidity, family history of asthma, history of asthma exacerbation, triggering factors, ever drink alcohol, ever smoke cigarette, social support, depression and attitude, all with p values <0.25. The multivariable logistic regression analysis revealed that comorbidity, past cigarette smoking, past alcohol consumption, and social support were significant predictors of self-care practices among asthmatic patients. Notably, the absence of comorbidity was significantly associated with better self-care practices; participants without co-morbidities had higher odds of exhibiting good self-care practices compared with those with co-morbidities (adjusted OR (AOR): 2.0, 95% CI: 1.26 to 3.10). Additionally, there was a significant correlation between never consuming alcohol and self-care practices. Participants who reported never drinking alcohol had greater odds of practicing good self-care compared with those who had consumed alcohol at any point (AOR: 4.33, 95% CI: 2.52 to 7.44). Similarly, individuals who had never smoked demonstrated a significant association with good self-care practices compared with those who had smoked; the odds of practising good self-care were lower among those who reported ever smoking (AOR: 6.67, 95% CI: 2.46 to 18.1). LastlyFinally, participants who reported having social support also exhibited a significant association with good self-care practices. Those with social support had higher odds of engaging in good self-care compared with individuals lacking such support (AOR: 1.57, 95% CI: 1.00 to 2.48) (table 4).

Table 3 Knowledge, attitude and behavioural characteristics of adult asthmatic patients at public hospitals in East Wollega zone receiving follow-up care OPD, West Ethiopia, 2023 (n=413)

Variables	Categories	Frequency	Percent
Have you ever drank alcohol?	Yes	112	27.1
	No	301	72.9
Are you currently drinking alcohol?	Yes	57	50.9
	No	55	49.1
If yes, how many times a week?	<2	20	35
	≥2	37	65
Have you ever smoked cigarretes?	Yes	54	13.1
	No	359	86.9
Do you currently smoke cigarettes?	Yes	31	57.4
	No	23	42.6
If yes, how many cigarettes do you smoke per day?	<5	7	22.6
	5–10	6	19.4
	≥11	18	58
Have you been doing regular physical exercise?	Yes	349	84.5
	No	64	15.5
If yes, which physical exercise do you practice?	Walking	316	90.6
	Gymnastic	13	3.7
	Running	20	5.7
Duration of doing regular physical exercise per day (in minute)	<30 min	193	46.7
	≥ 30 min	156	37.8
Social support	Have social support	206	49.9
	No social support	207	50.1
Anxiety	Normal	12	2.9
	Borderline	76	18.4
	Abnormal	325	78.7
Depression	Normal	97	23.5
	Borderline	90	21.8
	Abnormal	226	54.7
Knowledge	Poor knowledge	155	37.5
	Good knowledge	258	62.5
Attitude	Negative attitude	147	35.6
	Positive attitude	266	64.4

OPD, Outpatient Department.

DISCUSSION

This study was aimed to assess the magnitude of good self-care practice and associated factors among adult asthmatic patients on the follow-up care at public hospitals in East Wollega zone, West Ethiopia. The results indicated that over half (51.6%) of the participants demonstrated good asthma self-care practices in the study area. These findings are consistent with a study conducted in Bangladesh[18] and Taiwan[25] in which good asthma self-care practice was found to be 49.63% and 51.5%, respectively. In

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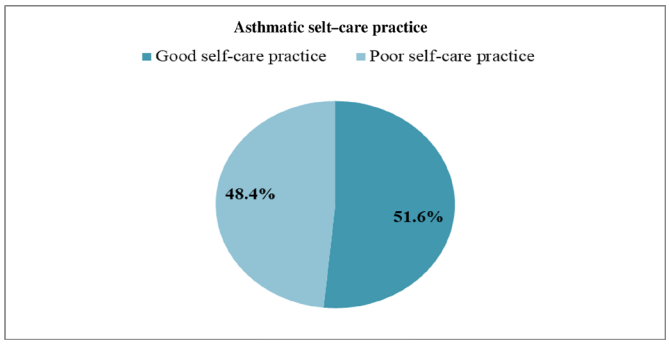

Figure 2 Self-care practices of adult asthmatic patients at public hospitals in East Wollega zone receiving follow-up care OPD, West Ethiopia, 2023. OPD, Outpatient Department.

contrast, this finding is lower than the 57.1% reported in a study conducted in Saudi Arabia.[14] The discrepancy in results may be attributed to variations in the health-related information provided, the study design (which utilised a mixed-method approach), and the availability of resources, health facilities and health education programmes have enhanced patients'' understanding of self-care. However, the study was limited by a small sample size of 125 participants, as well as the impact of lifestyle modifications and the socio-demographic characteristics of those involved on asthma self-care practices. Additionally, this finding was higher than those reported in studies conducted in the northern region of Ethiopia (42.3%) and Rwanda (33.8%), respectively.[15 17]

In the northern region of Ethiopia, this discrepancy may be attributed to several factors, including the socio-demographic characteristics of the study participants, with 30.2% lacking formal education. Additionally, the study did not evaluate patients'' attitudes toward asthma self-care practices, and it was conducted in a limited number of settings (only three hospitals). Furthermore, a significant portion of participants demonstrated poor knowledge of asthma self-care practices (41.5%), and there were prevalent socio-cultural habits among the participants, such as a 75.5% rate of alcohol consumption. In Rwanda, this discrepancy may be attributed to several behavioural factors, including a 45.5% rate of alcohol consumption among participants. Other contributing elements include the duration of the study, a limited sample size, and the fact that the research was conducted across only

Table 4 Bivariable and multivariable logistic regression analysis for factors associated with good self-care practice among patients with asthma receiving follow-up care OPD at public hospitals in East Wollaga zone, West Ethiopia, 2023 (n=413)

		Self-care practice					
Variables	Categories	Good	Poor	COR 95% CI	P value	AOR 95% CI	P value
Residence	Urban	131	110	1.30 (0.88 to 1.93)	0.18	1.02 (0.64 to 1.62)	0.93
	Rural	82	90	1		1	
Family history of asthma	Yes	91	79	1			
	No	109	134	1.42 (0.96 to 2.10)	0.08	1.24 (0.79 to 1.95)	0.35
Co-morbidity	Yes	99	62	1		1	
	No	101	151	2.39 (1.59 to 3.58)	0.01	2 (1.26 to 3.10)*	0.03
History of asthma	Yes	147	139	1			
	No	53	74	1.48 (0.97 to 2.25)	0.07	1.10 (0.67 to 1.83)	0.70
Triggering factors	Yes	98	88	1			
	No	102	125	1.37 (0.93 to 2.01)	0.12	1.26 (0.79 to 2.00)	0.32
Ever drink alcohol	Yes	88	24	1		1	
	No	112	189	6.19 (3.72 to 10.29)	0.01	**4.33 (2.52 to 7.44)***	0.01
Ever smoke	Yes	49	5	1		1	
	No	150	208	13.59 (5.25 to 34.69)	0.01	**6.67 (2.46 to 18.1)***	0.01
Social support	Have social support	124	82	2.56 (1.72 to 3.80)	0.01	**1.57 (1.00 to 2.48)***	0.04
	No social Support	77	130	1		1	
Depression	Normal	51	46	1.06 (0.47 to 1.22)	0.25	1.06 (0.57 to 1.77)	0.99
	Borderline	46	44	1.25 (0.49 to 1.31)	0.37	0.79 (0.45 to 1.40)	0.43
	Abnormal	103	123	1			
Attitude	Positive	122	144	0.75 (1.24 to 1.99)	0.16	1.04 (0.64 to 1.69)	0.87
	Negative	78	69	1		1	

Bold values indicate variables under AOR, are significant for p-value.
*significant factors for P- value
AOR, Adusted odd ratio; CI, Confidence Interval; COR, Crude Odd Ratio; OPD, Outpatient Department.

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three health centres and one hospital. Furthermore, participants in the current study demonstrated a higher level of knowledge and a more positive attitude toward asthma self-care practices compared with findings from studies conducted in the northern region of Ethiopia and Rwanda, respectively.[15 17]

Asthmatic patients with social support were found to be 1.57 times more likely to engage in good asthma self-care practices compared with those without social support. This suggests that having social support may enhance self-care behaviours, ultimately leading to improved self-care practices. These findings align with a study conducted in the northern region of Ethiopia, which indicated that asthmatic patients lacking social support were nearly twice as likely to exhibit poor self-care practices compared with their counterparts who had social support.[15] Another study conducted in the U.S.USA supports this finding, demonstrating that social support from family and friends is crucial for individuals with chronic illnesses, such as asthma. This support helps them develop a positive self-concept and self-esteem, which in turn fosters emotional and social backing for effective self-care practices. Specifically, it aids in medication adherence and ensures that patients have accompaniment to healthcare facilities on the day of their appointments.[24 25]

Asthmatic patients without comorbid illnesses were twice as likely to engage in effective asthma self-care practices compared with those with comorbid conditions. This indicates that the presence of comorbidities is associated with a higher likelihood of inadequate self-care among participants. These findings align with a study conducted in the northern region of Ethiopia, which found that asthmatic individuals with comorbid illnesses were nearly twice as likely to exhibit poor self-care practices compared with those without any comorbid conditions.[15] Comorbid illnesses can exacerbate a patient's condition, hindering their ability to adhere to self-care practices. This complexity complicates the diagnosis and management process, potentially resulting in misdiagnosis, under-treatment or over-treatment.[26]

Asthmatic patients who did not smoke cigarettes were 6.67 times more likely to demonstrate effective asthma self-care practices compared with those who did smoke. This indicates that a history of smoking is linked to a higher likelihood of poor self-care behaviours, which can damage the lungs and alveoli. Notably, individuals who smoke more than 11 cigarettes per day seem to be particularly at risk for exacerbating their asthma symptoms.[27]

The Global Initiative for Asthma Strategy 2021 emphasises that abstaining from smoking is an important self-care practice for individuals with asthma. Smoking can significantly exacerbate asthma symptoms and lead to more severe health complications. By choosing to refrain from smoking, patients are actively managing their health and taking proactive steps to enhance their respiratory function and overall well-being.[28]

Another study found in Taiwan supports this finding; patients with no smoking history who quit smoking have better self-care practices than those who continue smoking.[25] Cigarette smoking is linked to a faster decline in lung function, greater reliance on health services, and heightened severity of asthma symptoms. This highlights how quitting smoking can enhance lung function in adult asthmatic patients. However, it is important to note that asthmatic individuals who smoke may exhibit poor self-care practices.[29]

Asthmatic patients who abstained from alcohol were 4.33 times more likely to demonstrate good self-care practices compared with those who consumed alcohol. This suggests that individuals with a history of alcohol consumption tend to engage in poorer self-care. This finding aligns with a study conducted in northern Ethiopia, which found that asthmatic patients who drank alcohol were nearly twice as likely to adopt poor self-care practices compared with their non-drinking counterparts.[15] Additionally, alcohol consumption can harm the lungs and trigger asthma exacerbations. Consequently, asthmatic patients who drink may neglect their medications and demonstrate decreased self-care practices.[17] Consuming alcohol, particularly wine, seems to be a significant trigger for asthma exacerbations, leading to alcohol-induced asthma. This condition results in pathological bronchoconstriction, impacting many individuals with asthma.[30]

Strengths and limitations

The current study has several strengths. It used a structured questionnaire to collect comprehensive information on self-care practices and related factors among asthmatic patients, resulting in a strong dataset for analysis. The use of face-to-face interviews contributed to a 100% response rate. Additionally, the research was conducted across all hospitals in the East Wollega zone, enhancing its multi-centre approach. However, there are notable limitations. First, the cross-sectional design of the study prevents the establishment of causal relationships between asthma self-care practices and associated factors. Second, self-reported data on asthma self-care practices may lead to biases, potentially inflating or deflating reported practices. Thirdly, participants might struggle to accurately recall their self-care practices, introducing inaccuracies and bias in reporting. LastlyFinally, the findings may not be applicable to all asthmatic patients in Ethiopia or other regions, as the sample was drawn from a specific zone with distinct socio-cultural characteristics.

CONCLUSION

The study found that just over half of the asthmatic patients in the area demonstrated good self-care practices. This indicates that a considerable number of asthmatic patients may not be fully adhering to the recommended self-care behaviours. Furthermore, the research identified several significant factors associated with good self-care practices among these patients, including the absence of comorbid

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conditions, a history of never consuming alcohol, being a non-smoker, and having robust social support.

Implications of the finding

Our findings highlight that asthma poses a significant health challenge in the East Wollega zone. These findings underscore the importance of asthma as a public health issue in the zone and highlight the need for public hospitals and hospital management to prioritise interventions promoting behavioural changes, to empower patients to practice better self-care and strengthen self-care practices, particularly by addressing modifiable triggers that are needed.

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ORCID iDs

Demiso Geneti http://orcid.org/0009-0008-6955-2424
Getu Mosisa http://orcid.org/0000-0001-5337-7512

REFERENCES

1 Reddel HK, Sawyer SM, Everett PW, *et al*. Asthma control in Australia: a cross-sectional web-based survey in a nationally representative population. *Med J Aust* 2015;202:492–7.
2 Reddel HK, Bateman ED, Becker A, *et al*. A summary of the new GINA strategy: a roadmap to asthma control. *Eur Respir J* 2015;46:622–39.
3 Obel KB, Ntumba KJM, Kalambayi KP, *et al*. Prevalence and determinants of asthma in adults in Kinshasa. *PLoS One* 2017;12:e0176875.
4 Shiferaw F, Letebo M, Misganaw A, *et al*. Non-communicable Diseases in Ethiopia: Disease burden, gaps in health care delivery and strategic directions. *Ethiopian Journal of Health Development* 2018;32.
5 Eden Yitna T. Prevalence of Asthma and Its Association with Daily Habits in Jimma Town, Ethiopia. *Open J Asthma* 2018;2:011–7.
6 Bonaccorsi G. The global initiative for asthma guidelines. 2019.
7 Riegel B, Barbaranelli C, Sethares KA, *et al*. Development and initial testing of the self-care of chronic illness inventory. *J Adv Nurs* 2018;74:2465–76.
8 Riegel B, Jaarsma T, Strömberg A. A middle-range theory of self-care of chronic illness. *ANS Adv Nurs Sci* 2012;35:194–204.
9 Riegel B, Jaarsma T, Lee CS, *et al*. Integrating Symptoms Into the Middle-Range Theory of Self-Care of Chronic Illness. *ANS Adv Nurs Sci* 2019;42:206–15.
10 Pinnock H, Epiphaniou E, Pearce G, *et al*. Implementing supported self-management for asthma: a systematic review and suggested hierarchy of evidence of implementation studies. *BMC Med* 2015;13:127.
11 Pinnock H. Supported self-management for asthma. *Breathe (Sheff)* 2015;11:98–109.
12 Abbas NQ, Amen MR. Knowledge on Self-Management and Level of Asthma Control among Adult Asthmatic Patients Attending Kalar General Hospital. *Journal of Garmian University* 2019;6:310–9.
13 Perez L, Morales KH, Klusaritz H, *et al*. A health care navigation tool assesses asthma self-management and health literacy. *J Allergy Clin Immunol* 2016;138:1593–9.
14 Dailah HG. A self-management program for adults with asthma in Saudi Arabia. University of Salford (United Kingdom); 2020.
15 Abegaz SM, Wassie M, Azagew AW. Self-care practice and associated factors among adult asthmatic patients on follow-up care at Northwest Amhara referral hospitals, Northwest Ethiopia 2020. *BMC Pulm Med* 2021;21:140.
16 Yifter H, Omer A, Gugsa S, *et al*. Early detection and management of major non-communicable diseases in urban primary healthcare facilities in Ethiopia: a study protocol for a type-3 hybrid implementation-effectiveness design. *BMJ Open* 2021;11:e040564.
17 Kabanyana P. *Asthma severity, perception and self-care practices among asthma patients In Rwanda*. University of Rwanda, 2019.
18 Mohammod K, Kunsongkeit W, Masingboon K. Factors related to self-care practice in asthmatic patients at rajshahi in Bangladesh. *Bangladesh J Med Sci* 2019;18:57–62.
19 Koyra H, Chinasho T. Treatment adherence and factors affecting among adult Asth-matic patients at Soddo Christian general hospital, Southern Ethiopia: Cross-Sectional Study. *Int J Re-Spir Pulm Med* 2019;6:121.
20 Abubaker E, Alharthi B, Alharthi SA. Self-management and control of asthma among adult patients in King Faisal medical complex Taif, KSA. 2017.
21 Başol G. Validity and Reliability of the Multidimensional Scale of Perceived Social Support-Revised, with a Turkish Sample. *Soc Behav Pers* 2008;36:1303–13.
22 Al-Dubai SA, Ganasegeran K, Alshakka M, *et al*. Anxiety and depression among asthmatic patients in Malaysia. *ASEAN Journal of Psychiatry* 2016;17:1–9.
23 Heluf H, Assefa N, Dessie Y, *et al*. Adherence to anti-asthma medications among adult asthmatic patients in Eastern Ethiopia: A multi-center cross-sectional study. *PLoS One* 2022;17:e0277796.
24 Sloand E, Butz A, Rhee H, *et al*. Influence of social support on asthma self-management in adolescents. *J Asthma* 2021;58:386–94.
25 Huang T-T. Self-care behavior of adult asthma patients. *J Asthma* 2007;44:613–9.
26 Kaplan A, Szefler SJ, Halpin DMG. Impact of comorbid conditions on asthmatic adults and children. *NPJ Prim Care Respir Med* 2020;30:36.
27 Begum K, Haque S, Islam T, *et al*. Factors related to severe acute asthma attack and treatment. *Int J Pharm Sci Res* 2012;3:2603.
28 Reddel HK, Bacharier LB, Bateman ED, *et al*. Global Initiative for Asthma Strategy 2021: Executive Summary and Rationale for Key Changes. *Am J Respir Crit Care Med* 2022;205:17–35.
29 To T, Daly C, Feldman R, *et al*. Results from a community-based program evaluating the effect of changing smoking status on asthma symptom control. *BMC Public Health* 2012;12:293.
30 Matsuse H. Mechanism and management of alcohol-induced asthma. *Nihon Arukoru Yakubutsu Igakkai Zasshi* 2016;51:214–20.

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