

Original article

Magnitude and determinants of out of pocket health expenditure among patients visiting outpatients in public hospitals in East Shoa Zone, Ethiopia

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ABSTRACT

Background: Out-of-pocket payment (OOP) for healthcare services remained the main means of the financing health system in developing countries for a decade. Therefore, we assessed the magnitude and determinants of OOP healthcare expenditure among patients visiting the outpatients in public Hospitals in East Shoa Zone, Ethiopia.

Methods: We conducted an institution-based cross-sectional study among participants in public hospitals in the East Shoa zone, Oromia Region. A multivariate logistic regression analysis was used to identify determinants of OOP healthcare expenditure and statistical significance was declared at a p-value of less than 0.05 and the association was described by using an Adjusted odds ratio (AOR) at a 95% Confidence Interval (CI).

Result: Of the 378 respondents, 332(87.8%) were paid OOP healthcare expenditures at service delivery points. We found that, respondents aged 31–49 years old (AOR = 2.58, 95% CI (1.16–5.77)), secondary education and above (AOR = 4.85, 95% CI (1.59–14.83)), monthly income \geq 4000 ETB (AOR = 5.67, 95% CI (1.97–16.31)), urban residents (AOR = 3.61, 95% CI (1.29–10.16)) and family size (AOR = 2.67, 95% CI (1.11–6.44)) were significant determinants of OOP healthcare expenditure.

Conclusion: We found that a significant number of outpatients' department users were paid out-of-pocket expenditures for medical services. Educational status, family size, residence, and respondents' monthly income were significantly associated with out-of-pocket healthcare expenditure. So, the government and stakeholders should strengthen efforts to design the Urban CBHI scheme and Social health insurance, which guarantees urban communities access to health services without facing financial hardship for all communities.

1. Background

To ensure health care is accessible to all, the World Health Organization (WHO) launched the Universal Health Coverage (UHC). An important aspect of achieving UHC is to promote a financial risk pooling system and move from out-of-pocket expenditure to prepayment mechanisms such as Community Based Health Insurance (CBHI).^{1,2} Despite significant progress towards achieving UHC, healthcare in Low and Middle-Income Countries (LMIC) remained inaccessible and inequitable due to high OOP healthcare expenditure.³ Globally, around 200 million people incurred catastrophic health expenditures whereas around 100 million people were pushed below the poverty line.⁴ In 2010, WHO recommends that direct out-of-pocket payments should not exceed 15–20% of the total health expenditure, to reduce catastrophic

health expenditure to a negligible level.⁵ Although WHO used a 40% threshold for defining catastrophic health expenditures, the defined threshold for the proportion of catastrophic medical expenditures qualifying as catastrophic health expenditures vary by study and ranges from 15% to 40% of households' income.⁶ In 2015, the proportion of households spending 10% of their income on healthcare increased from 9.4% to 12.7% whereas the number of households spending 25% of their income on medical care increased from 1.7% to 3% worldwide. The OOP health expenditure ranges from 20% to 60% in LMIC while it is estimated to be 15%–25% of total healthcare expenditure in developed countries.^{4,7}

In many countries, Out-of-pocket spending on health care accounted for a substantial portion of household expenditure among financing mechanisms. For instance, in Philippines study found that OOP medical spending as a share of total health expenditure was 56.5% in 2013 and

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List of abbreviations

AOR	Adjusted Odd Ratio
BPL	Below the Poverty Line,
CBHI	Community Based Health Insurance
CI	Confidence Interval
COR	Crude Odd Ratio
DRC	Democratic Republic of Congo
ETB	Ethiopian Birr
EHA	Ethiopian Health Account
GDP	Gross Domestic Product
FMOH	Federal Ministry of Health
LMIC	Low and Medium-Income Countries
IPD	Inpatient Department
ORHB	Oromia Regional Health Bureau
OOP	Out of Pocket;
OOPME	Out of Pocket Medical Expenditure
OPD	Outpatient Department
OR	Odd Ratio
UHC	Universal Health Coverage
USD:	United State Dollar
WHO	World Health Organization

55.8% in 2014 respectively.⁸ Moreover, the study in India revealed that 86% of households covered their medical expenditure on hospitalization through households income while 42% paid through borrowing, 18% covered through the contribution from family or friends, and 6% paid through other sources of finance.⁹ In Africa, out-of-pocket health spending accounted for 40% of total health expenditure and this exposed a significant number of communities to financial burden and reduced their health services utilization.¹⁰⁻¹² For example, a report from 143 African countries indicated that 25.6% of households were not utilized health services due to financial barriers.¹³ Besides, excessive reliance on OOP health spending and poor healthcare finance also remained a challenge for the health system of Ethiopia.^{14,15}

In Ethiopia, the OOP expenditure was 34% of total health expenditure, with around 96% of Out-patients(OPD) services budget being from OOP expenses made by households.^{16,17} The rapid growth of healthcare costs was a great concern for both households and governments of developing countries including Ethiopia.¹³ As a result, the initiation of Community based health insurance schemes was included in the health care financing strategy of 1998, with aim of mobilizing resources for the health sector, improving qualities and coverage of different health services, and ensuring equity in the distribution of resources. Community-Based Health Insurance scheme was a viable alternative to increases access to health care services and protecting employees of informal sectors and households in rural areas from catastrophic health expenditure.¹⁸ For instance, finding from North West Ethiopia revealed that 50.5% of CBHI members visited health facilities compared to non-insured households (29.3%).¹⁹ In addition, according to the Federal Ministry of Health report, 72.3% of CBHI members utilized health services from public health facilities.²⁰ Moreover, previous findings in Ethiopia found that the out-of-pocket spending was reduced by 23.2% while the annual outpatients' visits and resources mobilized by health facilities increased by 111% and 47% respectively as a result of CBHI implementation.²¹⁻²³ However, around 18% of households enrolled in the CBHI scheme in the first discontinued their subscription in the second year due to poor quality of healthcare services and knowledge of the CBHI program.²⁴

Out of pocket medical expenditure is an important indicator to determine the effectiveness of the healthcare system in achieving universal health coverage. Similarly, out-of-pocket medical spending varies from year to year as the economy of the countries and the level of CBHI

coverage and enrollment improved. However, due to the absence of urban community-based health insurance and social health insurance schemes in Ethiopia, a significant number of urban communities and employees in the formal sectors paid out-of-pocket payments at the point of service delivery. In addition, as the East Shoa zone is among CBHI piloted areas, the current status of out-of-pocket medical expenditure among communities visiting public health facilities in the zone is unknown. So, knowing the magnitude and determinants of out-of-pocket medical expenditure among patients visiting outpatients had paramount importance in designing and developing an effective health policy that covers all communities. Therefore, this study aimed to assess the magnitude and determinants of out-of-pocket healthcare expenditures among patients visiting outpatients in public hospitals in the East Shoa zone, Ethiopia.

2. Methods and materials

2.1. Study area, design, and population

The study was conducted in public hospitals in East Shoa, Oromia Region, Ethiopia from 18th February to March 9, 2019. East Shoa zone had five public hospitals that provide outpatient and inpatient care for rural and urban communities. We conducted this study in Bishoftu General hospital and Olanchite primary hospital which have around a 135-bed capacity and serve over 214,060 patients annually. In addition to routine services, these hospitals serve as referral facilities for health centers found in this zone and nearby districts. All clients who visited public hospitals in the East Shoa zone were considered the source population and all individuals who received outpatients services from randomly selected hospitals were study populations. We included all outpatient clients who visited the hospitals at the time of data collection and were willing to participate whereas patients whose residential areas were out of the East Shoa Zone were excluded to reduce inflation of the OOP healthcare expenditure spending result.

2.2. Sample size and sampling procedure

We calculated the sample size using the single population proportion formula, taking the proportion of clients paid OOP expenditure = 80%,²⁵ marginal error (5%), a confidence interval of 95%, design effect of 1.5, and non-response rate of 10%. We used multistage random sampling, with the purposive selection of the East Shoa zone as a CBHI piloted area. Then, in the zone, we randomly selected two public hospitals from five hospitals in the East Shoa Zone, Oromia Region. We started the study by listing outpatients departments (clinics) and followed by the proportional allocation of samples to each department/clinic. We assessed the average number of patients who visited each outpatient department for the same period of our data collection from last year's hospitals' reports and determined the interval (K) by dividing the number of patients attending each outpatient department by the final sample size. Then, we selected the participants of the study using a systematic random sampling method for every fifth patient receiving service at the outpatient pharmacy from the sampled department/clinics.

2.3. Study variables

Out of pocket healthcare expenditure among patients who visited the outpatient department was the dependent variable, whereas socio-demographic (age, sex, residence, marital status, educational status, and family size), monthly income, and type of illnesses were the independent variables.

2.4. Operational definitions

Out of pocket healthcare expenditure was defined as the proportion

of respondents who faced out-of-pocket payment for consultation, medication, and an investigation among participants who received the outpatient services during the data collection period.

Direct non-medical expenditure: Out-Of-Pocket healthcare expenditures associated with transportation, and daily living payments including accommodation, and food for the accompanying household members or caregivers, and additional expenses for the caregiver during outpatient and inpatient visits.

Direct medical expenditure: Out-Of-Pocket healthcare expenditures were calculated in terms of direct payments made by households to healthcare providers at the point of receiving healthcare services. This included registration/card fees, medicines, laboratory tests, etc., for outpatient visits; and for inpatient stays, bed charges at healthcare facilities.

Direct costs: Out of pocket healthcare expenditure associated with card fees/consultation, diagnostic workup medications, and transportation.

Indirect cost: Out of pocket healthcare expenditure associated with loss of working time of the person who is ill and caregivers, loss of income of the person who is ill and caregivers (due to absenteeism, missing business appointments, etc.).

Monthly household Per capita income: It refers to the family income per person is calculated by taking the total gross family income which includes primary income and receipts from other sources received by all family members for the months, as participants in any economic activity or as receipts of transfers, pensions or grants divided by the total number of family members living together.²⁶

2.5. Data collection procedures and quality management

Data were collected through interviews with structured questionnaires. The questionnaire was prepared in English and translated to Afan Oromo and retranslated back to English to check the consistency. The data collection tool consisted of socio-demographic and economic characteristics, patient/Household health insurance status, types of illnesses, and OOP medical expenditures. Data were collected by two data collectors after one-day training on the data collection questionnaire and the objective of the study. A pre-test was conducted on 5% of the sample in Adama Hospital and the amendment was made accordingly. Data collection was supervised by the principal investigator and data were also checked for completeness every day by the investigator.

2.6. Data analysis and interpretation

Data were cleaned, coded, and entered into STATA version 14 for analysis. Descriptive statistics such as frequencies and proportions were computed for categorical variables whereas continuous variables were summarized by mean with standard deviation(SD) or median with Interquartile range(IQR). Then, data were presented using tables and graphs. Variables with a P-value < 0.25 in the bivariate logistic regression analysis were entered into the multivariate logistic regression model to identify determinants of out-of-pocket medical expenditure. A p-value of less than 0.05 and an Adjusted Odds Ratio (AOR) with 95% CI was used to declare the statistically significant determinants of the outcome.

2.7. Ethical Approval and consent

The study was ethically approved by Addis Ababa University, School of Public Health Institutional Health Research and Ethics Review Committee. An official support letter was also obtained from the Oromia Regional Health Bureau Research ethical clearance unit. The study participants were informed about the study objectives, purposes, and procedures and enrolled in this study after the written informed consent was obtained.

3. Result

3.1. Sociodemographic and clinical characteristics of study participants

In this study, the response rate was 93.1%. Out of the 378 study participants, more than half (60.6%) were males and 64.3% of them were married. The majority of the respondents (58.2%) were in the age group of 31–49 years. Around three-fifth (59.5%) of the respondents were from urban areas and 37(9.79%) of them were a member of the health insurance scheme. More than one-third of participants had monthly income between 2000 and 4000 ETB, with a mean monthly income of 1711 (SD: 1131). Three hundred twenty-six (86.2%) participants were treated for acute illnesses while 36(9.5%) were treated for an injury or accident-related health problems (Table 1).

3.2. Magnitude of out-of-pocket health expenditures among outpatients

Out of 378 participants, 332(87.8%) of them were paid out of pocket for getting medical services at the service delivery point. Besides, 37 (9.79%) individuals used CBHI cards to utilize healthcare services whereas nine participants were fee waived (Fig. 1). Our study found that the mean out-of-pocket medical expenditure for the outpatient visit was 351.48 ETB (13.81\$), with a median of 320ETB (11.25\$). The direct OOP medical costs incurred by respondents accounted for 38% of the total out-of-pocket medical expenditure, followed by indirect costs (37.3%) and direct non-medical costs (24.9%)(Table 2).

3.3. Out-of-pocket healthcare expenditures for sociodemographic and clinical characteristics

We presented OOP health expenditures among different socio-demographic characteristics of respondents in Tables 2 and 3. We found that respondents who reside in urban areas spend the mean OOP health expenditure of 367.36 ETB (12.92\$) on health care compared to the rural residents (mean = 343.32 ETB)(12.07\$)(Table 2). The men also spent more out of pocket health expenditure (mean 336.44ETB) (11.79 \$) than female (mean 330.61ETB) (12.03\$) on OPD services. The average OOP health expenditure for the age group 31–49 years was 347.34 ETB (12.21\$). The mean OOP healthcare expenditure that individuals who had primary education spent were 320.69ETB (11.27\$) whereas those who had secondary education and above spent

Table 1

Sociodemographic and clinical characteristics of study participants visiting Hospitals in East Shoa Zone, Oromia, 2019.

Individual background	Categories	Number (%)
Sex	Male	229 (60.6)
	Female	149(39.4)
The educational level	No formal education	75 (19.8)
	primary	113(29.9)
	Secondary and above	190(50.3)
Age (in years)	<31	103 (27.2)
	31–49	220(58.2)
	50±	55 (14.6)
Marital status	Married	243(64.3)
	Single	135(35.7)
Health insurance status	Yes	37(9.8)
	No	332(87.8)
	Fee waived	9(2.4)
Residence	Urban	225(59.5)
	Rural	153(40.5)
Types of illness	Acute Illness	326(86.2)
	chronic Illness	16(4.2)
	Injuries/accidents	36(9.5)
Total household size	<5	221(58.5)
	≥5	157(41.5)
Monthly income of households (in birr)	<2000	84 (22.2)
	2000–4000	134 (35.4)
	>4000	160(42.3)

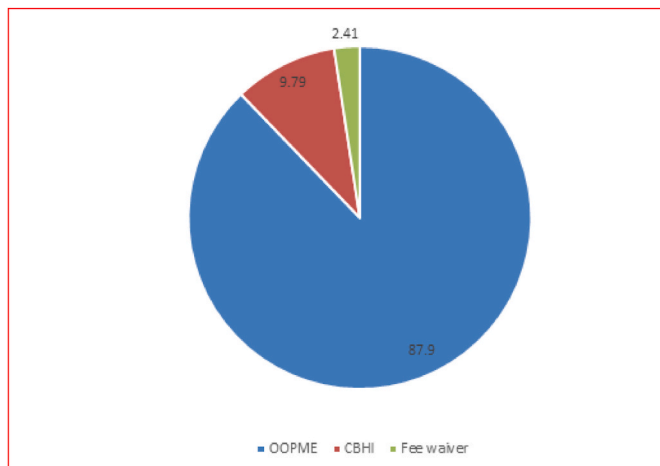


Fig. 1. Magnitude of OOP healthcare expenditure among participants visiting outpatients in public hospitals in the East Shoa zone of the Oromia region, 2019.

345.31ETB (12.14\$) for health services. Besides, the individuals whose income was above 4000ETB spent a mean of 347.76 ETB (12.22\$) whereas those earning monthly income less than 2000 ETB spent 335.18 ETB (11.78\$) on OPD services (Table 3). Moreover, respondents with acute illnesses spent 397.56ETB (13.97\$) whereas individuals with chronic illnesses and injury/accidents spent 314.45 ETB (11.05\$) and 436.26ETB (15.33\$) respectively (Fig. 2).

3.4. Determinants of out-of-pocket healthcare expenditure

In the bivariate logistic regression analysis, some of the variables such as; age, sex, residence, educational status, family size, marital status, and households' monthly income were considered for multivariate logistic regression model (Table 4). After adjusting for other variables, age, educational status, family size, residence, and household monthly income showed a statistically significant association with out-of-pocket healthcare expenditure in multivariate logistic regression analysis. This study indicated that respondents who had secondary and above education levels were almost 5 times more likely to pay out-of-pocket healthcare expenditures than those who had informal education [AOR = 4.85; 95% CI, 1.59, 14.83]. Households whose family size is less than 5 members were 2.67 times more likely to pay out-of-pocket healthcare expenditures than their counterparts [AOR = 2.67; 95% CI, 1.11, 6.44]. Besides, respondents' who reside in urban areas were almost 4 times more likely to pay out-of-pocket healthcare expenditures than rural residents [AOR = 3.61; 95% CI, 1.29, 10.16]. In addition, the odds of paying out-of-pocket healthcare expenditure were 2.58 times higher among individuals who were in the age group 31–49 years old compared to participants who were less than 31 years old [AOR = 2.58; 95% CI, 1.16, 5.77]. Moreover, we found that the participants who had a monthly income of 4000 and above ETB were almost 6 times more likely to pay out of pocket healthcare expenditures than those who had had a

Table 2
The average of OOP medical expenditure for outpatient services in Public hospitals in East Shoa Zone, 2019 (In ETB).

Type of cost	Urban			Rural			Total		
	Mean	Median	%OOP	Mean	Median	%OOP	Mean	Median	%OOP
Transportation cost	20.89	16	6	14.87	10	4.3	16.91	16	4.8
Consultation cost	12.96	15	3.5	13.38	15	3.9	13.24	15	3.76
Investigation Cost	47.22	45	12.8	43.99	45	12.8	45.09	45	12.8
Medication cost	76.08	65	20.7	73.73	55	21.5	74.53	55	21.2
Food and other cost	69.81	62.50	19.0	70.82	65	20.6	70.48	65	20.14
Indirect cost	140.39	100.00	38	126.53	100.00	36.9	131.24	100.00	37.3
Total	367.36	337.00	100	343.32	310.50	100	351.48	320.00	100

monthly income of less than 2000 ETB [AOR = 5.67; 95% CI, 1.97, 16.31](Table 4).

4. Discussion

Catastrophic out-of-pocket healthcare expenditure occurs in all countries and is responsible for inequalities in access to health care, particularly in developing countries.²⁷ The study assessed the magnitude of out-of-pocket healthcare expenditure and its determinants among patients visiting Outpatients in public hospitals in East Shoa Zone, Oromia Region. In this study, we found that 87.8%(95% CI: 85, 91) of the respondents were paid out-of-pocket healthcare expenditure during visiting outpatient for Health services. This finding is lower than the national value of 96%¹⁶ and higher than the study conducted in Colombia, 73.9%),²⁸ Côte d'Ivoire, 34.13%,²⁷ and Kenya,28.38% Fogera.²⁹ The variation might be due to differences in the study period, coverage of prepayment financing method, setting, and geographic variation.

In our study, factors such as residence, age, family size, educational level, and households' income were determinants of OOP healthcare expenditures for outpatient services. We found that the odds of paying out of pocket healthcare expenditure were 2.58 times higher among individuals who were in the age group 31–49 years old compared to participants who were less than 31 years old. This is in line with studies in the Philippines,³⁰ Peru,³¹ Côte d'Ivoire,²⁷ and Zambia.³² Besides, individuals from urban residents were almost 4 times more likely to pay out-of-pocket healthcare expenditures compared with an individual from rural residents. This finding is supported by the study conducted in the Philippines,³⁰ China,³³ and Zambia.³² This is explained by the argument that most the rural communities were covered by community

Table 3
Average out-of-pocket health expenditures for the health care services received by some individual and community background characteristics.

Variable	Categories	Total OOPME (in ETB)		
		Mean	Median	Standard Deviation
Sex	Male	336.44	307.00	100.59
	Female	330.61	300.00	121.70
Age(In years)	<31	321.12	294.00	127.10
	31–49	347.34	315.50	119.08
	50±	320.94	311.00	76.368
Marital status	Married	330.37	301.00	107.24
	Single	352.15	310.00	131.35
The educational level	No formal education	324.07	278.00	122.815
	Primary education	320.69	296.00	110.523
	Secondary and above	345.31	316.00	104.681
Family size	<5	333.10	301.00	101.95
	≥5	345.26	316.00	134.83
Monthly Income	<2000	335.18	291.00	139.92
	2000–4000	328.54	285.50	116.80
	≥4000	347.76	323.50	102.46

Note: 1 USD = 28.45 ETB (Ethiopian birr).

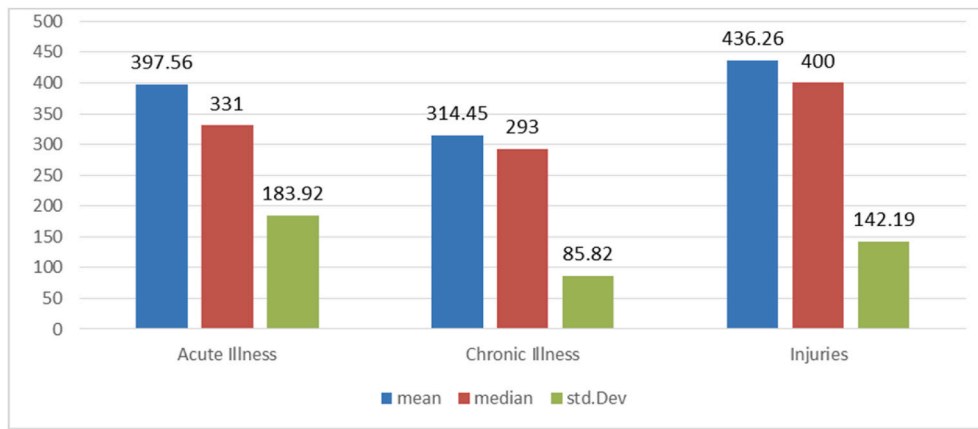


Fig. 2. Out of pocket expenditure by Types of illness among participants who received OPD services from hospitals in East Shoa Zone, Oromia, 2019.

Table 4
Multivariate Logistic regression analysis for the determinants of out-of-pocket expenditure for outpatient visiting in public Hospitals in East Shoa zone, Ethiopia, 2019.

Variable	Category	OOPME		COR (95%CI)	AOR (95% C. I)
		Yes (%)	No (%)		
Age (in years)	31	83 (22.0)	20 (5.3)	1	1
	31-49	199 (52.6)	21 (5.6)	2.28 (1.18,4.44)	2.58 (1.16,5.77)*
	50 and above	50 (13.2)	5 (1.3)	2.41 (0.851,6.83)	3.12 (0.913,10.67)
Residence	Urban	214 (56.6)	11 (2.9)	5.77 (2.83,11.77)	3.61(1.29, 10.16)*
	Rural	118 (31.2)	35 (9.3)	1	1
Marital status	Married	211 (55.8)	32 (8.5)	1	1
	Single	121 (32.0)	14 (3.7)	1.31 (0.673,2.55)	1.84 (0.816,4.14)
Sex	Male	207 (54.8)	22 (5.8)	1	1
	Female	125 (33.1)	24 (6.3)	0.56 (0.298, 1.03)	1.80 (0.771,4.19)
Educational status	Informal education	52 (13.8)	23 (6.1)	1	1
	Primary education	96 (25.4)	17 (4.5)	2.5(1.23, 5.09)	1.57 (0.637, 3.88)
	Secondary and above	184 (48.7)	6 (1.6)	13.56 (5.25, 35.06)	4.85 (1.59,14.83)*
Monthly income (in birr)	<2000	57 (15.1)	27 (7.1)	1	1
	2000-4000	121 (32.0)	13 (3.4)	4.41(2.12, 9.18)	2.06 (0.850, 4.99)
	≥4000	154 (40.8)	6 (1.6)	12.16 (4.77, 30.98)	5.67(1.97, 16.31)*
Family size	<5	209 (55.3)	12 (3.2)	4.82(2.40, 9.64)	2.67(1.11, 6.44)*
	≥5	123 (32.5)	34 (9.0)	1	1

Note: *p < 0.05.

based health insurance mechanisms, which guarantee them against financial hardship at the service delivery point.

This found that the educational status of respondents was positively associated with out-of-pocket health expenditure for getting health services. The study was supported by the finding from a study conducted in Malaysia,³⁴ Zambia,³² Uganda,³⁵ Nigeria,³⁶ and Ethiopia³⁷ which showed that participants who had high level of education were more likely to pay out of pocket expenditure than those who had informal education. The possible explanations for this result could be, people that

who are more educated are more likely to be employed in government facilities, which in turn can be exposed to catastrophic healthcare expenditure as a result of the absence of Social health insurance scheme. Furthermore, our study revealed that income was significantly associated with OOP health expenditure. This finding was supported by the study conducted in Malaysia,³⁴ Zambia,³² Rwanda,³⁸ Gojjam Zone, Ethiopia,³⁹ and Debre Markos, Ethiopia.⁴⁰ This might be explained by high-income individuals who can afford healthcare were not willing to join the prepayment mechanism and prefer to pay OOP payments due to the poor quality of services at public health facilities.

Study participants with small family sizes were more likely to pay out-of-pocket health expenditures than those with greater or equal to five family members. This finding is similar to those of other studies conducted in Togo,⁴¹ Kenya,⁴² and Addis Ababa, Ethiopia.³⁷ This is explained by large family members who might be enrolled in the pre-payment schemes due to fear of the excessive out-of-pocket expenses from medical bills at a time of occurrences of unpredictable illnesses. Our study had several limitations. First, patients who left the hospital due to unavailability of prescribed were not represented in this finding since interviewing was conducted on patients who came to the outpatient pharmacy of the hospital after they received services from different departments of the hospital. Secondly, as the data was collected in a short period, seasonal variation which may affect the level of OOP expenditure may not be fully captured by the current findings. Finally, getting reliable information on the household’s annual income and expenditure was also another challenge due to recall bias.

5. Conclusion

In this study, the majority (87.7%) of respondents were paid out of pocket payment at service delivery point. We found that increased age, urban residents, secondary and above educational, family size greater than five, and households with high monthly income were more likely to pay out of pocket health expenditures. So, the government and stakeholders should strengthen efforts to design the Urban Community-based health insurance scheme, which guarantees urban communities to access quality health services without facing financial hardship. Besides, the government should also implement prepayment methods such as social health insurance to reduce the financial burden in the formal sectors specifically for government employees, to reduce direct out-of-pocket payment at service delivery points.

Consent for publication

Not applicable.

Availability of data and material

The datasets used or analyzed during this study were available from the corresponding author on reasonable request.

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Authors' contributions

DB and AH designed and worked on the study protocol. AK, AH, and DB prepared data collection tools and provided training to data collectors. DB, AK, and AH analyzed patient data and wrote the first draft of the manuscript. AK, AH, and DB interpreted the result. All authors read, validated, and approved the final manuscript.

Declaration of competing interest

The authors declare that they have no competing interests.

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