Health System Responsiveness and Its Associated Factors Among Outpatients in Primary Health Care Facilities, Asagirt District, NorthShewa Zone, Ethiopia, 2021: Cross Sectional Study Design

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Research Article

Keywords: Health system responsiveness, Outpatients, Asagirt, Ethiopia

Posted Date: October 5th, 2021

DOI: https://doi.org/10.21203/rs.3.rs-929469/v1

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Health system responsiveness and its associated factors among outpatients in primary health care facilities, Asagirt District, North Shewa Zone, Ethiopia, 2021: Cross sectional study design

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Abstract

Background: Health system responsiveness is defined as the outcome of designing health facility relationships in such a way that they are familiar and respond appropriately to patients’ universally legitimate expectations. Even though different strategies have been implemented to measure responsiveness, only scanty evidence exists in Sub-Saharan Africa. In Ethiopia information about the level of health system responsiveness among outpatients is scant. Assessing responsiveness could help facilities in improving service delivery based on patient expectations.

Objective: The study aimed to assess health system responsiveness and associated factors among outpatients in primary health care facilities, Asagirt District, North Shewa Zone, Ethiopia, 2021.

Methods: Facility-based cross-sectional quantitative study was implemented between 30th March and April 30/2021. A systematic random sampling technique was employed to select 423 participants, and interviewer-administered data were collected using a structured and pretested questionnaires. Both bivariable and multivariable logistic regressions were employed to identify factors that have an association with health system responsiveness. Adjusted Odds Ratio with their corresponding 95% CI was used to declare factors associated with health system responsiveness. A p-value less than 0.05 was used to declare statistical significance in this study.
Results: The overall health system responsiveness was 66.2% (95% CI: 61.4% - 70.7%). Confidentiality and dignity domains were the highest responsiveness score. Health system responsiveness was higher among satisfied outpatients (AOR: 9.9, 95% CI: 5.11-19.46), utilized private clinics (AOR: 8.8, 95% CI: 4.32-18.25), and no transport cost (AOR: 1.7, 95% CI: 1.03-2.92) in the study setting.

Conclusion: Overall health system responsiveness was higher as compared to other case-specific study in Ethiopia. The domains of Autonomy, Waiting time, Basic amenities, and Choice were identified as vital areas needing the effort to raise responsiveness of health care service in the District. HSR was higher in private than public healthcare facilities, among satisfied clients and those who didn’t pay for transport on their way to the health facility than their counterparts. Thus, enhancing patient satisfaction, using input from service users, Collaboration, and experience exchange between public and private facilities will be important interventions to improve HSR.

Keywords: Health system responsiveness, Outpatients, Asagirt, Ethiopia

Background

All health systems are expected to achieve the goals of good health, responsiveness to the expectations of the population, and fairness of financial contribution [1-4]. From these goals; health system responsiveness (HSR) is defined by the World Health Organization (WHO) as “how well the health system meets the legitimate expectations of the population for the non-health enhancing aspects of the health system” [5]. Health systems can be evaluated as a whole in any type of interaction by summarizing into responsiveness [6, 7]. The concept entails the experience of people’s fundamental interaction and different factors shaping their interaction with the health system. This intern can help to anticipate and adapt to the existing and future health needs for a better health outcome [1, 5, 8]. To provide appropriate and efficient care delivery, more responsive and updated health systems with giving attention to intrinsic values and safeguarding of the rights of patients are needed [2, 4, 9-12]. However, the burden of diseases and conflicts in low and middle-income countries threatening the capacity of health systems to respond to the population they serve [13-15]. But the fulfillment of patient expectations is more important than other factors for a better health outcome [16]. If health system responsiveness has improved other associated health outcomes improved as well [7].

Responsiveness has been operationalized into eight domains as respect for the dignity of persons; autonomy to participate in health-related decisions; confidentiality; prompt attention; adequate quality of care; communication; access to social support networks; and choice of health care providers [1, 2, 8, 17].
Despite challenges for measuring responsiveness, additional refinement of strategy and consistent monitoring are needed to achieve its goal [5, 14, 18]. Notably, those low and middle-income countries are needed to give attention to equity health access at local and global aspects [19-21]. Studying health system responsiveness is needed to improve patient experiences and their satisfaction in the sphere of non-medical aspects [22-25]. A patient-centered and acceptable quality across the continuum of care is essential through considering social norms, relationships, values, and trust within societies [26]. The measurement of health system responsiveness also will help to identify the level of performance health facilities [1].

For a better and comprehensive understanding of non-health enhancing aspects of health systems, measuring health care responsiveness is necessary [1, 14]. This is because the fulfillment of patients’ expectation is more important than other factors for a better health outcome [16].

Factors like Community-related factors, socio-economic factors, and environmental-related factors affect the responsiveness of health care systems during the current epidemic crisis [27]. These create gaps in the responsiveness performance to meet the expectation of the clients regarding how they should be treated and the convenience of the environment in which they are treated [28]. Equity with good interaction targeting all sections of the society in a health facility is very important to improve health care utilization [23, 29]. Generally, to improve responsiveness, it needs performance evaluation and higher spending level from a policy perspective in low-income settings [4, 29]. Although WHO has a strong commitment to the implementation of the strategy for evaluating responsiveness, the measurement is still challenging [5]. Due to little evidence on the responsiveness of the health system in the primary health care settings [30], there is a need to interview patients to know their experiences with the health system [31]. However, little is known in African countries [29, 32, 33] particularly, in Ethiopia, there is no systematically organized study addressing health system responsiveness in a domain-based manner. It is, therefore, essential to explore information on responsiveness to improve and progress towards universal health coverage (UHC) [14]. Therefore, this study was aimed to fill this research gap by assessing health system responsiveness, and associated factors among outpatients from primary health facilities.

**MAIN TEXT**

**Methods**
Study settings

The study was conducted in Asagirt District, North Shewa Zone, Ethiopia. The District is 125.5 Kilometers (Km) far from Addis Ababa, the capital city of Ethiopia. It has 15 kebeles (the lowest administrative unit). Asagirt District is located in North Shewa Zone, Amhara National Regional State of the eastern edge of Ethiopia. The 2020 projected population of the District was 57,320. Of whom 30,240 were males. The District has a total of 20 functional health facilities: 3 public health centers, 2 primary private clinics, and 15 health posts (community-level health facilities providing basic preventive and medical care). In 2021 a total of 52 health professionals and 23 health extension workers were served the District. According to the District health managers’ report, there was an average of one thousand seven hundred (1700) patients visiting health centers and private clinics within a month.

Study design and Period

A facility-based cross-sectional quantitative study design was conducted to assess health system responsiveness among outpatients from 30th March to April 30/2021.

Population

All outpatients who received health care services in primary health care facilities residing in Asagirt District constitute the source population of this study. Patients who received health care services as an outpatient in the selected primary health care facilities were included in the study. Whereas patients whose age below 18 years, and all outpatients who were utilized health posts were excluded from this study.

Sampling and Sample size

The sample size for health system responsiveness was determined by using single population proportion formula [34]. With an assumption of a 50.0% probability of the responsiveness of patients (there is no local data available on the subject for outpatient and to get maximum sample size), 95% of confidence level ($Z_{α/2} = 1.96$), Margin of error=5%. The calculation indicated the sample size of 384.16. After adding a 10% non-response rate the total sample size was estimated to be 423 clients. Computed as $n = \frac{(Z_{α/2})^2 P (1-P)}{d^2}$
n = (1.96)² 0.5 (1-0.5) = 384.16

(n)²

n = 384.16 + 38.416 = 423

**Sampling technique and procedure**

Firstly, the sample size was proportionally allocated to each facility. To select the calculated sample size, a systematic random sampling technique from all five primary health care facilities was employed (there are five primary health care facilities in the District excluding health posts). Then at every $K\text{th}$ interval ($K = N/n$) where $N$ = total clients who was received health care services within the study period $n$ = required sample size, thus $K = 1700/423 = 4$. Then, the first patient was randomly identified from 4 by lottery method, and then every 4$\text{th}$ patient was taken into the study till the required number of study participants for each facility in the outpatient department was reached (fig.1).

**Variables and measurement**

Health system responsiveness of outpatient service was the dependent variable. It was measured the quality and interaction of the non-clinical aspects of health care provision (patients' opinions and experiences about health care services they received). The index was customized from WHO multi-country studies and from the report of Ethiopia's health sector transformation plan (HSTP II) [4, 7, 35, 36]. The 28 items were divided among 7 domains as communication (4), Confidentiality (3), Quality of basic amenities (5), Dignity (4), Choice (3), Prompt attention (5), Autonomy (4). The eighth domain (access to social support network) was not assessed since it is used for assessing inpatients (hospitalization) only [11, 31]. All the 28 items were computed and then it was dichotomized as “acceptable” and “unacceptable” by the demarcation threshold formula as: $\frac{\text{Total highest score} - \text{Total lowest score}}{2} + \text{total lowest score}$ [37-39]. Accordingly, those who scored 73 and above HSR was considered as “Acceptable” and below considered as “Unacceptable”.

Likewise, all the seven domains were added separately and grouped as good and poor by the above formula [37-39]. Above the cut-off point to determine “Good” performance, while including cutoff point and below scores were considered as “Poor” for each domain independently.
**Perceived satisfaction of clients:** Patient satisfaction was measured by using 5 questions on a five-point Likert scale with five response categories (1 ‘very dissatisfied’ to 5 ‘very satisfied’), and finally it was grouped by using the demarcation threshold formula [38, 39]. And those who scored 15 and above were considered as “Satisfied” whereas below 15 was considered as “Dissatisfied”.

**Perceived quality of care score**: assessed by 12 questions of the clients’ perception about the services they offered, professionalism of provider as well as, the patient values and interests in the services. Then it was dichotomized into “high” for those who scored above 37 and “low” for those who scored 37 and less [37].

**Out of pocket payment**: was assessed by Yes/No question [23].

**PHQ-9**: was assessed by 9 depression questions to assess whether the patient has depression or not ranging from 1 ‘always’ to 4 ‘not at all’ after which it was dichotomized as “poor” and “good” with a cutoff point of 23 [40].

**Data collection tools and procedure**

Closed-ended interview questionnaires adapted from WHO health system responsiveness and questionnaires developed from reviewing different related literatures, were used for data collection. The questionnaire was prepared in English first, then translated to Amharic (local language), and then retranslated back to the English language to check its consistency. The reliability of the tools was checked by Cronbach’s alpha reliability test. Accordingly, values for PHQ-9 (0.87), for satisfaction (0.89), for perceived quality of health care (0.96), and average Cronbach’s alpha for all domains was 0.92, all showed high reliability above the required cut-off 0.70. The questionnaire mainly includes socio-demographic assessment, health facility-related, WHO responsiveness assessment questionnaires, perception on quality of care, and health insurance membership. The data collectors went and collected the data from participants’ after they have received the services on their way to the home (exit interview). The data were collected daily. A data collector has approached by introducing him/her self and interviewed the selected respondent after informed consent was obtained.
Data quality assurance

Before the data collection, one-day training was given for all data collectors and supervisors by the principal investigator about the mechanism of data collection to have a similar understanding. Five B.Sc. Health Officers for data collectors and two supervisors of the same field who were working out of study areas participated in the data collection process. The training process focused mainly on the objective of the study, how to ask and fill the questionnaires, selection criteria of patients and how to approach the respondents without introducing biases. Additionally, the facility workers were not allowed either to see or hear the patients’ response. During the data collection, data collectors were assigned for the supervisor for better monitoring. Before starting the actual data collection, the data collectors had practiced in the field and the questionnaires were pretested on 21 (5%) patients in the nearby District (Angolela and Tera District). The data collectors and the principal investigator had assessed the clarity and completeness of the questionnaires. Findings and experiences from the pretest were utilized in modifying the data collection tool. When there was any problem during the data collection process, the investigator had discussed it with the supervisor and a solution was given on a daily bases.

Data processing and analysis

Once the collected data were checked for completeness then the data were entered into the Epi-data version 4.6 Software Package. Then it was exported to Stata version 14 statistical software packages for cleaning, coding, and analysis. A two-stage data analysis (descriptive and inferential) was conducted. The descriptive statistics were described using frequency, percentage, mean and standard deviation and presented by a figure, table, and text. All continuous independent variables were categorized. Normality tests such as kurtosis and skewness were employed to identify which summary measure is appropriate to use. Multicollinearity among independent variables were checked using variance inflation factor (VIF) and was found no multicollinearity (mean value = 1.13). Both bi-variable and multi-variable logistic regressions were employed. All explanatory variables in binary logistic regression with a p-value of 0.25 and below were considered candidate variables for multivariable logistic regression analysis to control confounding factors. In the final model, Adjusted Odds Ratio (AOR) with their corresponding 95% confidence intervals (CI) was
used to declare factors associated with health system responsiveness. A p-value less than 0.05 was used to declare statistical significance in this study.

Results

Socio-demographic characteristics of the study participants

A total of 417 outpatients were participated in the study, giving a 98.6% response rate. The median age of the study participants was 33 years with an interquartile range of 25-49 years. And 40.8% were aged between 18-29 years. More than two-thirds (69.6%) of the patients were from rural residency. Of the study participants, 92.8% were Orthodox Christian followers (Table 1).

| Variables          | Frequencies (n) | Percentage (%) |
|--------------------|-----------------|----------------|
| Sex                |                 |                |
| Male               | 226             | 54.2           |
| Female             | 191             | 45.8           |
| Age in years       |                 |                |
| 18-29              | 170             | 40.8           |
| 30-39              | 89              | 21.3           |
| 40-49              | 54              | 13.0           |
| 50 and above       | 104             | 24.9           |
| Residence          |                 |                |
| Rural              | 288             | 69.6           |
| Urban              | 129             | 30.4           |
| Religion           |                 |                |
| Orthodox           | 387             | 92.8           |
| Muslim             | 30              | 7.2            |
| Occupational status|                 |                |
| Current marital status          | Married | 255  | 61.1 |
|-------------------------------|---------|------|------|
|                               | Not married** | 162  | 38.9 |
| Educational status            |          |      |      |
| Unable to read and write      | 70      | 16.8 |
| Able to read and write        | 105     | 25.2 |
| Primary (grade 1-8)           | 135     | 32.4 |
| High school and above         | 107     | 25.6 |
| Household monthly income(ETB)*** |        |      |      |
| >650                          | 138     | 33.1 |
| <=650                         | 268     | 64.3 |
| Unknown                       | 11      | 2.6  |

Notes: * = student, private employee, daily laborer ** = single, divorced, windowed *** = Ethiopian Birr (currency)

Health service accessibility-related characteristics

Nearly sixty eight percent of the participants utilized public health care facilities. More than half (56.1%) had traveled one hour and below to reach the health facility (Table 2).

Patient-related characteristics

Most (81.3%) of the respondents were good perceived satisfaction. Regarding patient health quality (PHQ-9) more than three-fourth (84.6%) had good perceived patient health quality (Table 3).
Performance of health system responsiveness of respondents

The performance of health system responsiveness was 66.2% (95% CI: 61.4% - 70.7%)

Domains of health system responsiveness

The domains of confidentiality and dignity were around 72% good performance. On the other hand, Choice was the least (37.2%) score on the good category of performance (Fig. 2).

Factors associated with health system responsiveness

Binary logistic regression was employed to evaluate the association between different sociodemographic, health facility related, and patient related variables with health system responsiveness. Variables that were found with a p-value < 0.25 in bivariable logistic regression such as age, occupation, educational status, type of facility, out of pocket payment for transport, perceived satisfaction about health care, and perceived quality of health were found to be a candidate for multivariable logistic regression. Model fitness was tested with Hosmer and Lemeshow Goodness of Fit test (p = 0.52). In the final multivariable logistic regression analysis;
type of health facility, OOP payment for transport, and patient satisfaction were significantly associated with HSR.

Health system responsiveness among private health care facility users were 8.8 times higher when compared with those who utilized public health facility (AOR: 8.8, 95% CI, 4.32–18.25). Participants who had not paid out of pocket for transport to reach health facility were 1.7 times higher health system responsiveness than their counterparts (AOR: 1.7, 95% CI, 1.03–2.92). The likelihood of health system responsiveness among satisfied patients were nearly 10 times higher when compared with patients having poor satisfaction (AOR: 9.9, 95% CI, 5.11-19.46) (Table 4)

Discussions

The study examined the health system responsiveness and associated factors among outpatients of primary health care utilization at Asagirt District, North Shewa Zone, Ethiopia. The overall HSR in the area was 66.2% (95% CI: 61.4%-70.7%). This finding is consistent with a study conducted in Wolaita zone, Ethiopia 68.3% [28]. However, the result was higher than the Federal Ministry of Health (FMOH) report (52.0%) in service responsiveness normalized score [14]. The possible explanation for this difference might be in the result from the Health Minister was only an average report. Similarly, the result was higher than a study conducted in Shewarobit, Ethiopia (55.3%) [37]. This could be differences in the study participants, in this study we investigated HSR among all outpatients in the District from each primary health care facility in the District, however, in Shewarobit the study was conducted on case-specific responsiveness among HIV positive individuals. Additionally, the observed better responsiveness might be a result of the government's ongoing efforts to improve service delivery. On the contrary, the finding was lower than a study conducted in Brazil (80%) [11]. This is possibly due to the differences in health care availability and accessibility where they are better than sub-Saharan Africa. Sociocultural and economic disparities also the possible likelihood for these differences. Probably also the difference in study population wherein Brazil it was conducted among older adults.

The performance of the responsiveness of health care utilization has differed across each domain. The finding is supported by studies conducted in Iran, Brazil, and Ethiopia [11, 41, 42]. Of the seven domains Confidentiality (71.7%) and Dignity (respect) (71.7%) were performed better. This is in line with two studies conducted in Iran [41, 42]. Similarly, in Tanzania confidentiality (86.7%) and dignity (81.4%) were the highest scores from the domain of responsiveness [23]. This might
be the users of health care services expect a high level of privacy and safeguard of their personal 
information by health professionals [43].

From the finding of this research, choice (37%) was found to be the lowest good performance. The 
finding of this study was in line with a study conducted in Iran which was (35.8%) [41]. However 
slightly better than studies conducted in Brazil in which choice was scored as 24.4% [11]. The 
possible explanation for this difference might be explained as the study period such that the study 
conducted in Brazil was seven years back.

Despite the highest performance scores on confidentiality (71.7%), Dignity (71.7%), 
communication (65.2%), our result revealed a concern by clients regarding; prompt attention 
(waiting time) (49.2%), basic amenities (42%) and Choice (37%). These were similar to other 
African countries of South Africa, Nigeria, and Tanzania [31-33] where prompt attention and 
quality of basic amenities were poorly performed. Thus, the result indicated demand and supply 
investments and the physical structure of the units proportional to the District population.

From the finding of this study, HSR did not significantly associated with the socio-demographic 
backgrounds of the study participants. This is in line with two other case specific studies conducted 
on HIV/AIDS in Ethiopia [23, 28]. Suggesting that HSR does not differ by socio-demographic 
background. This might require further exploration. On the contrary, a study in Nigeria [43] found 
that gender, educational status, and income were significantly associated with HSR. Similar to this 
in Tanzania [32] older age, sex, and being married were associated negatively whereas, high 
income and educational status were significantly associated with positive responsiveness. 
Elsewhere studies in German [44], Thailand [24], and India [17] age was significantly associated 
with health system responsiveness.

Health system responsiveness depends on financial aspects [45]. WHO suggested that travel time 
was a major contributor to poor responsiveness [15]. Supporting to this idea our study showed that 
the odds of HSR among participants with no out of pocket payment for transport to reach the health 
facility was 1.7 times higher than its counterparts. This could probably because the rating of HSR 
might be influenced by the expectations against relative total worth of expense in obtaining needed 
health care. As improvement in financial fairness health facilities could rate more responsive [28]
From the finding of this study, it has clearly shown that the likelihood of HSR among participants who were utilized private health facilities were nearly 9 times higher compared to public health facility utilizers. Similar to this, findings from the African countries’ of Ghana [46] and South Africa [31] suggested that the overall responsiveness of public health services was lower compared to private services. The possible reason for the highest responsiveness in private facilities might be due to differences in good patient-physician interaction. Thus, private facilities have the aim to maximize their profit to achieve this objective, they are more responsive to attract clients.

When clients were dissatisfied with health outcomes, responsiveness mean sum scores will become low [6, 47]. In agreement with this idea, this study observed that clients who had good satisfaction with the health care offered had higher HSR in relation to poorly satisfied individuals. Elsewhere studies in Ghana, Ethiopia [28, 29, 37] also indicated that the more satisfaction the higher the responsiveness. Additionally, the world health organization also suggested that except confidentiality all the domains of health system responsiveness were positively and significantly related to satisfaction [48]. Perhaps because as patients satisfied with a non-medical aspects of care, associated with better compliance and understanding of all the interactions of results. To achieve a higher level of welfare on non-health enhancing aspects of care, a greater health system responsiveness is needed.

**Strength and Limitations**

There might not be recall bias since the data were collected immediately after they get health care services on their way to home.

- The data were collected only from the patient perspective or did not include the providers’ perspective
- If the research was performed with a mixed approach, it could be better.
- We also acknowledge the response bias because of the self-reported data to minimize it short and interval questionnaires were employed.
- Because of the cross-sectional nature causal relationships between satisfaction, facility type and payment for transport with health system responsiveness cannot be established.
Conclusion

This study contributes to health system responsiveness research in Ethiopia among outpatients at primary health care facilities. Even though relatively higher health system responsiveness than case specific study in Ethiopia, the result showed that only confidentiality and dignity domains found the highest score. Overall, HSR was higher in private than public healthcare facilities, additionally satisfied clients and those who didn’t pay for transport on their way to the health facility were better responsive than their counterparts. The domain of Autonomy, Waiting time, Basic amenities, Choice were identified as failed to meet the legitimate expectation of the clients regarding the non-health aspects of medical care. They need effort to raise responsiveness of health care service in the District. In addition to this, enhancing patient satisfaction, using input from service users, sharing experience and working with collaboration from private clinics and giving attention to distant coming patients will be important interventions to improve HSR.

Abbreviations

AOR: Adjusted Odds Ratio; CBHI: Community Based Health Insurance; CI: Confidence Intervals; COR: Crude Odds Ratio; FMOH: Federal Ministry of Health; HIS: Health Insurance Scheme; HSR: Health System Responsiveness; MCSS: Multi-Country Survey Study; NHIS: National Health Insurance Scheme; OR: Odds Ratio; PHQ: Patient Health Quality; SHI: Social Health Insurance; UHC: Universal Health Coverage; VIF: Variance Inflation Factor; WHO: World Health Organization

Declarations

Ethics approval and consent to participate

Ethical clearance was obtained from the Institutional Review Board (IRB) of the University of Gondar, College of Medicine and Health Sciences, Institute of Public Health (Ref. No: IPH/1408/2013). Similarly, a support letter was obtained from the District Administration Health Office to carry out data collection. After a brief explanation of the objectives and purpose of the study, informed consent was obtained from each study participant. Participants were informed that participation was voluntary and they have the right to stop their participation at any time. The name of respondents were not be recorded on the questionnaires and confidentiality was assured.
by using codes instead of any personal identifiers. The study was done according to Helsinki declaration.

Consent for publication

Not applicable

Availability of data and materials

The data set is available on a reasonable request on the corresponding author.

Competing interests

The authors declare that they have no competing interests.

Funding

The University of Gondar sponsored this study. However, it has no role in the decision to publish, manuscript preparation, and publication.

Authors’ contributions

All authors contributed to the preparation of the manuscript. WD conceived and designed the research and performed the analysis then CTT, AA were advisors in the proposal and thesis writing. WD, DB, and DZ prepared the draft manuscript, then CTT, AA, LY revised the final drafts of the paper. All authors read and approved the final manuscript for publication.

Acknowledgments

We authors would like to acknowledge the Institute of public health, College of Medicine and Health Sciences, University of Gondar. Finally, our appreciation also goes to the data collectors and study participants who devoted their time to provide genuine information for this research.

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### List of tables

Table 2: Health facility accessibility related characteristics of the study participants in Asagirt District, primary health care facilities, North Shewa Zone, Ethiopia, 2021 (n=417)

| Variables                                      | Frequencies (n) | Percentage (%) |
|------------------------------------------------|-----------------|----------------|
| Time to reach the health facility on foot    |                 |                |
| <= 1hour                                      | 234             | 56.1           |
| Variables                        | Frequency (n) | Percentage (%) |
|---------------------------------|---------------|----------------|
| Type of health facility         |               |                |
| Public                          | 282           | 67.6           |
| Private                         | 135           | 32.4           |
| Visited traditional healer      |               |                |
| Yes                             | 185           | 44.4           |
| No                              | 232           | 55.6           |
| OOP payment for transport*      |               |                |
| Yes                             | 205           | 49.2           |
| No                              | 212           | 50.8           |

Note: *= out of pocket

Table 3: Patient related characteristics of the study participants in Asagirt District, primary health care facilities, North Shewa Zone, Ethiopia, 2021 (n=417)

| Variables                  | Frequency (n) | Percentage (%) |
|----------------------------|---------------|----------------|
| Perceived satisfaction     |               |                |
| Satisfied                  | 339           | 81.3           |
| Dissatisfied               | 78            | 18.7           |
| Perceived health care      |               |                |
| High                       | 338           | 81             |
| Low                        | 79            | 19             |
| PHQ9*                      |               |                |
| Good                       | 353           | 84.6           |
| Poor                       | 64            | 15.4           |

Note: *= patient health quality

Table 4: Bivariable and multivariable analysis of potential factors associated with HSR of outpatients in primary health care facilities, Asagirt District, North Shewa zone, Ethiopia, 2021 (n=417)
| Variables          | Health system responsiveness | COR (95% CI)    | AOR (95% CI)    |
|-------------------|------------------------------|----------------|----------------|
|                   | Unacceptable                 | Acceptable     |                 |
| **Age in years**  |                              |                |                |
| 18-29             | 52                           | 118            | 1              | 1              |
| 30-39             | 39                           | 50             | 0.56 (0.33-0.96)| 0.92 (0.47– 1.80)|
| 40-49             | 19                           | 35             | 0.81 (0.43-1.55)| 1.00 (0.45-2.0)  |
| 50 and above      | 31                           | 73             | 1.04 (0.61-1.77)| 1.64 (0.82-3.29)|
| **Occupational status** |                        |                |                |
| Farmer            | 56                           | 101            | 1              | 1              |
| House wife        | 35                           | 62             | 0.98 (0.58-1.66)| 0.98 (0.51-1.87)|
| Employed          | 30                           | 88             | 1.63 (0.96-2.76)| 1.03 (0.46-2.32)|
| Merchant          | 20                           | 25             | 0.69 (0.35-1.36)| 0.77 (0.33-1.79)|
| **Educational status** |                        |                |                |
| Unable to read and write | 25                         | 45             | 1              | 1              |
| Able to read and write | 36                         | 69             | 1.06 (0.57-2.00)| 0.85 (0.39-1.82)|
| Primary (Grade 1-8) | 58                         | 77             | 0.74 (0.41-1.34)| 0.51 (0.24-1.05)|
| High school and above | 22                         | 85             | 2.15 (1.09-4.22)| 1.21 (0.44-3.31)|
| **Type of health Facility** |                        |                |                |
| Public            | 129                          | 153            | 1              | 1              |
| Private           | 12                           | 123            | 8.64 (4.57-16.35)| **8.88 (4.32-18.25)***** |
| **Out of pocket expense for transport** |                        |                |                |
| Yes               | 85                           | 120            | 1              | 1              |
| No  | 56  | 156 | 1.97 (1.31-2.98) | 1.74 (1.03-2.92)** |
|-----|-----|-----|-----------------|--------------------|

**Patient health quality**

|       | 113 | 240 | 1.65 (0.96-2.84) | 0.80 (0.39-1.62) ** |
|-------|-----|-----|-----------------|--------------------|
| Good  |     |     |                 |                    |
| Poor  | 28  | 36  | 1               | 1                  |

**Patient satisfaction**

|       | 61  | 17  | 1               | 1                  |
|-------|-----|-----|-----------------|--------------------|
| Dissatisfied |     |     |                 |                    |
| Satisfied   | 80  | 259 | 11.62 (6.42-21.02) | 9.98 (5.11-19.46) *** |

Notes: * significant at P < 0.05 ** significant at P<0.01 *** significant at P < 0.001

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List of figures

Sampling procedure

Health facilities in the District

- Ginager HC (N=430)
- Tlahun (p1) (N=368)
- Tidesh HC (N=407)
- Daniel (p2) (N=190)
- Tamo HC (N=305)

Proportional allocation

Systematic random sampling technique

423 patients were selected

Key: HC, health center; P1, Private clinic1; p2, private clinic2
Figure 1: Schematic presentation of the sampling procedure to select 423 outpatients from primary health care facilities at Asagirt District, North Shewa Zone, Ethiopia, 2021.