



Jigjiga University
JJU

FELLOWSHIP IN RESEARCH (FRES) PROGRAMME



**Quality
Improvement
Medical
Education
Training (QiMET)**

Magnitude and sociodemographic, clinical, socio-cultural and psychological determinants of *H. pylori* infected Patients diagnosed with serology and endoscopy

A comparative hospital-based case-control study at Jigjiga University SHY Comprehensive Specialized Hospital, Ethiopia(2024-2026)

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Acknowledment

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- ☐ **The staff of the Gastroenterology Unit at JJU-SHY Comprehensive Specialized Hospital**
- ☐ **The data collection team, and the patients who consented to take part.**

PRESENTATION

Outline

01 Background and rationale

02 Problem statement and objectives

03 Methods and materials

04 Result

05 Discussion and limitations

06 Conclusion and recommendations

Background and rationale Of H.pylori Infection

79.1%

Pooled prevalence in Africa —
the highest of any WHO region

3rd

Rank of GI disease among
NCD causes in Ethiopia (15%
of aetiology)

60–75%

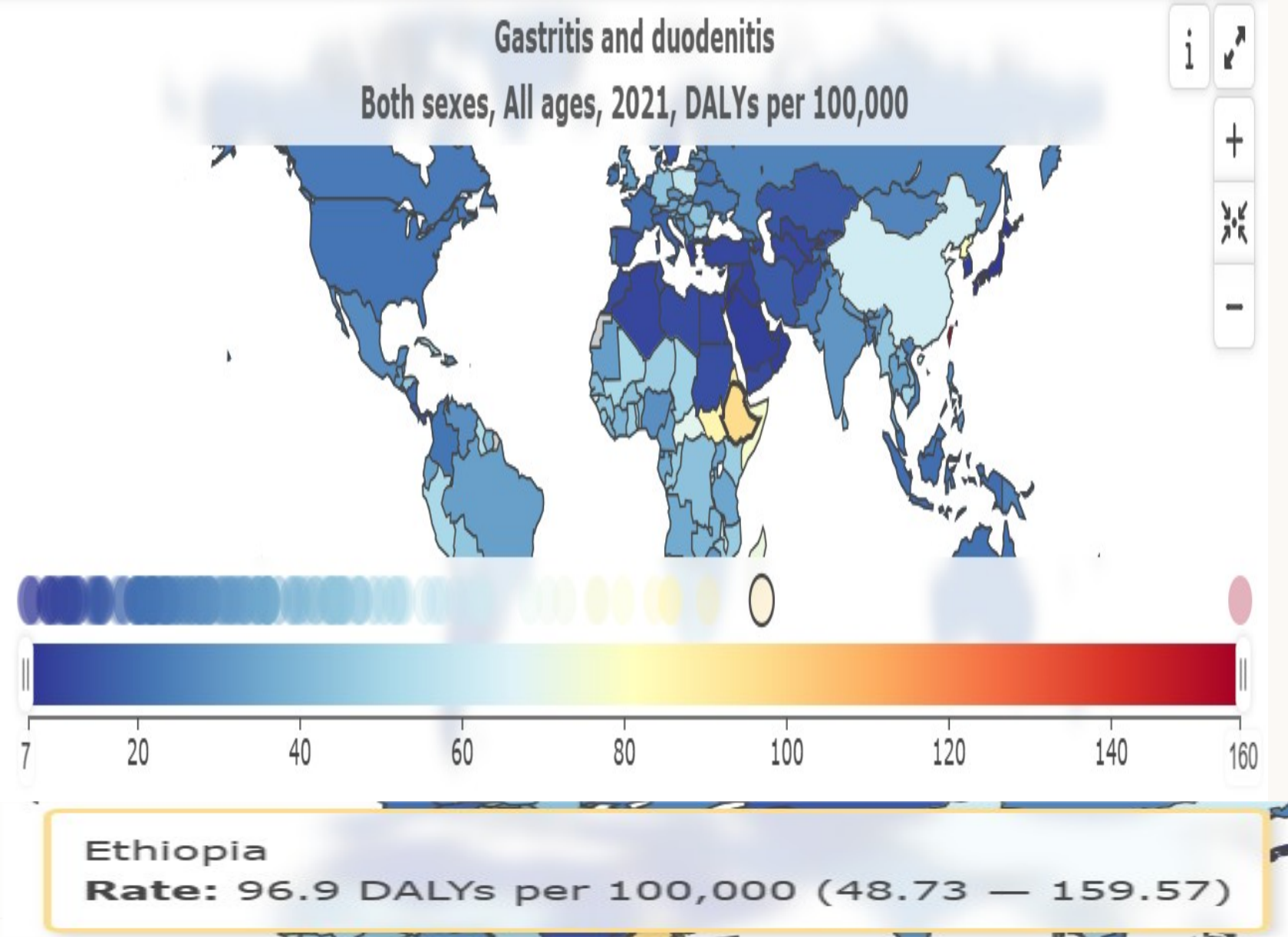
Estimated prevalence in
Ethiopia, 2010–2022

96.9

DALYs per 100,000 from
gastritis and duodenitis —
highest in East Africa

Classified by WHO in 1994 as a class I carcinogen.

Acquisition and progression are multifactorial.



Source: GDB: DALYs of gastritis
and duodenitis of Ethiopia, 2021

Statement of the problem

Dyspepsia is among the leading adult outpatient complaints

A single serology-based report exists from a university clinic:

- ❑ Determinants: lacks socio-cultural ,bahavioral and psychological factors.
- ❑ Study population: student.
- ❑ Diagnostic agreement remain ambuigity (antibody serology studies was used)

01 No global research study on All these 4 parameters in one study.

02 No local estimate of magnitude among both serology and endoscopic investigated patients

03 Social, cultural and behavioral determinants unmeasured

04 Psychological burden of chronic dyspepsia not documented

05 Recurrence and possible treatment failure never quantified

Objectives

GENERAL OBJECTIVE

To determine the magnitude and the sociodemographic, , socio-cultural, behavioral and psychological determinants of *H. pylori* infection among patients undergoing endoscopic evaluation at JJU-SHY Comprehensive Specialized Hospital.

SPECIFIC OBJECTIVES

- | | |
|--|--|
| 1 Measure prevalence among patients diagnosed by both serology and endoscopy | 4 Assess associations between these factors and positivity |
| 2 Identify sociodemographic and clinical risk factors | |
| 3 Describe behavioral and psychological contributors | |

Methods and materials

DESIGN Hospital-based quantitative case-control approach	SETTING Gastroenterology Unit, JJU-SHY CSH — 7–10 endoscopies weekly	PERIOD December 2024 – March 2026
SAMPLING Census — complete enumeration of all eligible patients	DATA COLLECTION e-CRF chart abstraction plus face-to-face or telephone interview	ETHICS JJU Research Ethics Review Committee; written informed consent

500+ endoscopies screened

127 patients eligible and enrolled

Upper GI symptoms, both serological and endoscopic investigation, complete chart, consent

Variables, measurement and analysis

OUTCOME DEFINITION

Positive stool antigen.
Endoscopy graded by the **Kyoto classification** and read as suggestive Vs non-suggestive.

Active indicators

Diffuse redness, nodularity, enlarged folds

Chronic indicators

Atrophy, intestinal metaplasia

INDEPENDENT DOMAINS

Sociodemographic

Age, sex, residence, education, occupation, income, family size

Clinical

Symptoms, duration, comorbidity, treatment history and outcome

Socio-cultural

Diet, water source, hygiene, crowding, animals, traditional remedies

Psychological

Stress, sleep, mood disturbance, diagnosed mental illness

SPSS and Power BI. Chi-square and bivariable logistic regression; variables at $p < 0.025$ entered a multivariable **Firth** model to manage sparse data.

Results

127 patients · descriptive analysis, then bivariable and multivariable modelling

Sociodemographic characteristics

74%

49.1

73%

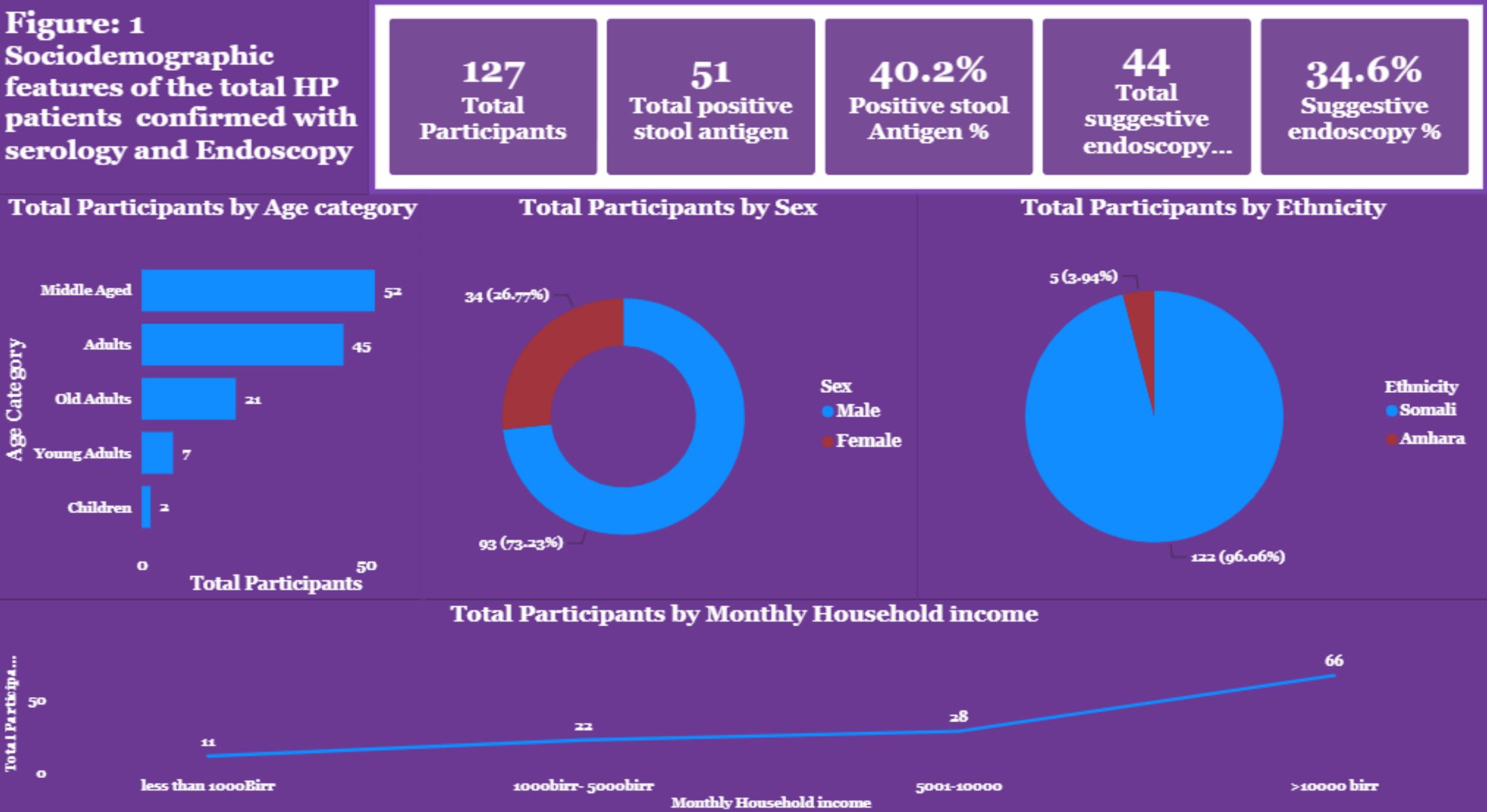
46%

male

mean age (±17.2)

urban

no formal education



Educational Level	Suggestive endoscopy %	Positive stool Antigen %
College	3.1%	9.4%
No formal education	7.9%	18.1%
Primary education(1-8)	0.8%	2.4%
Secondary education(8-12)		3.9%
University level	1.6%	6.3%
Total	13.4%	40.2%

RESULTS

Magnitude of H. pylori infection

40.2%

Positive stool antigen

51 / 127

34.6%

Suggestive endoscopy

44 / 127

13.4%

Positive on both tests

17 / 127

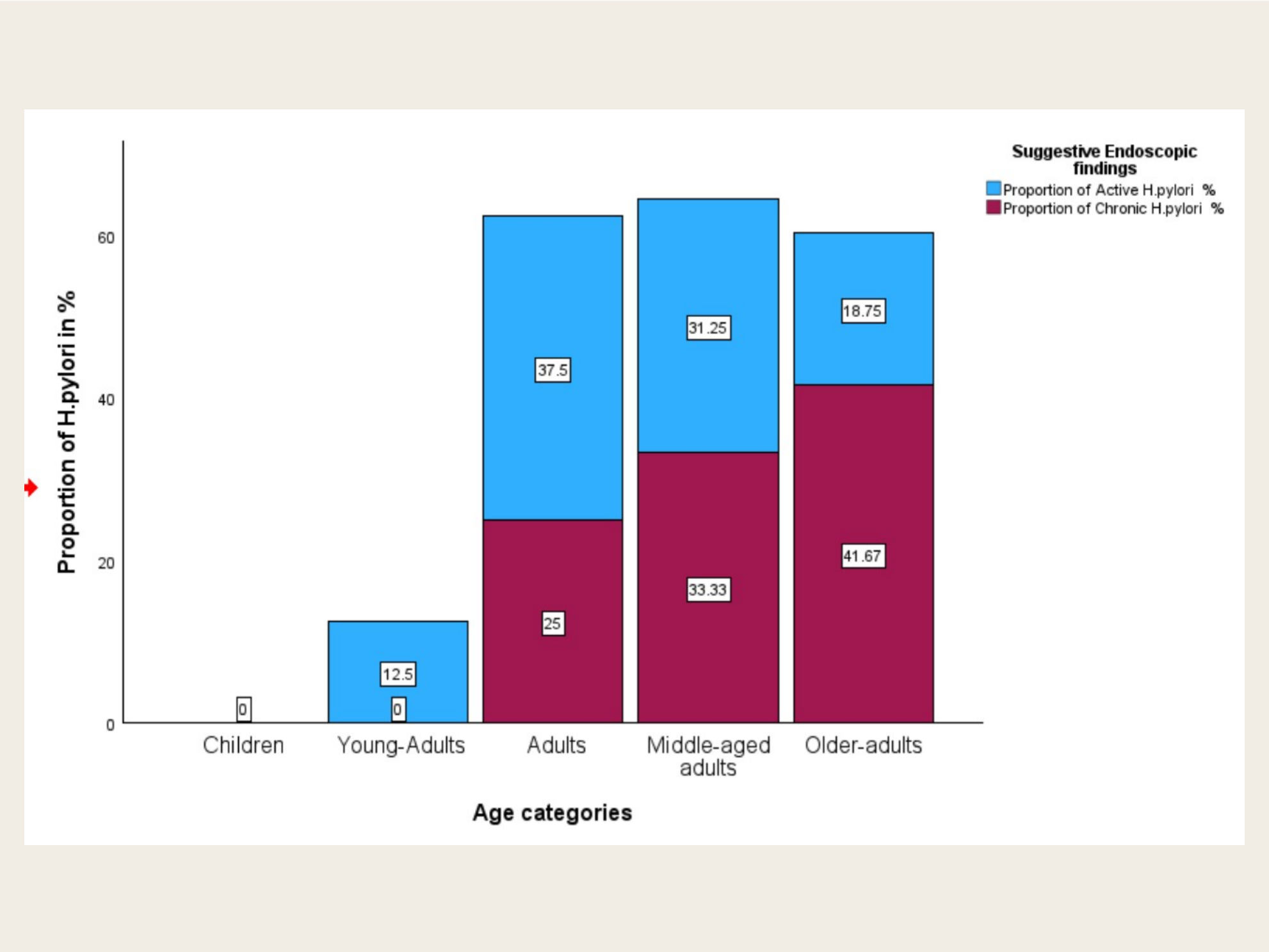
Comparable with Ethiopian stool-antigen estimates of 37.6% and 34.0% among dyspeptic patients, and below the pooled national figure of 52.2%.

Considerably below the 71% previously reported for the Somali subgroup — an estimate resting on very limited regional evidence.

Stool-antigen status was unknown for 32 patients; many had prior treatment, which can suppress bacterial load and detection.

RESULTS

Endoscopic pattern by age category



CHRONIC INDICATORS

Highest in older adults (41.7%) and middle-aged adults (33.3%) — atrophy and intestinal metaplasia

ACTIVE INDICATORS

Highest in adults (37.5%) and middle-aged adults (31.3%); all children presented with active-type findings

PRECURSOR LESIONS

Atrophy in 5 patients and intestinal metaplasia in 5 — small numbers, but relevant to future gastric-cancer risk

Figure 4 — Proportion of active and chronic H. pylori endoscopic findings by age category (n=44)

RESULTS

Serology-endoscopy concordance

7 of 17

Kyoto score 1

9 of 17

Kyoto 0 with ulcer

1 of 17

Kyoto score 2

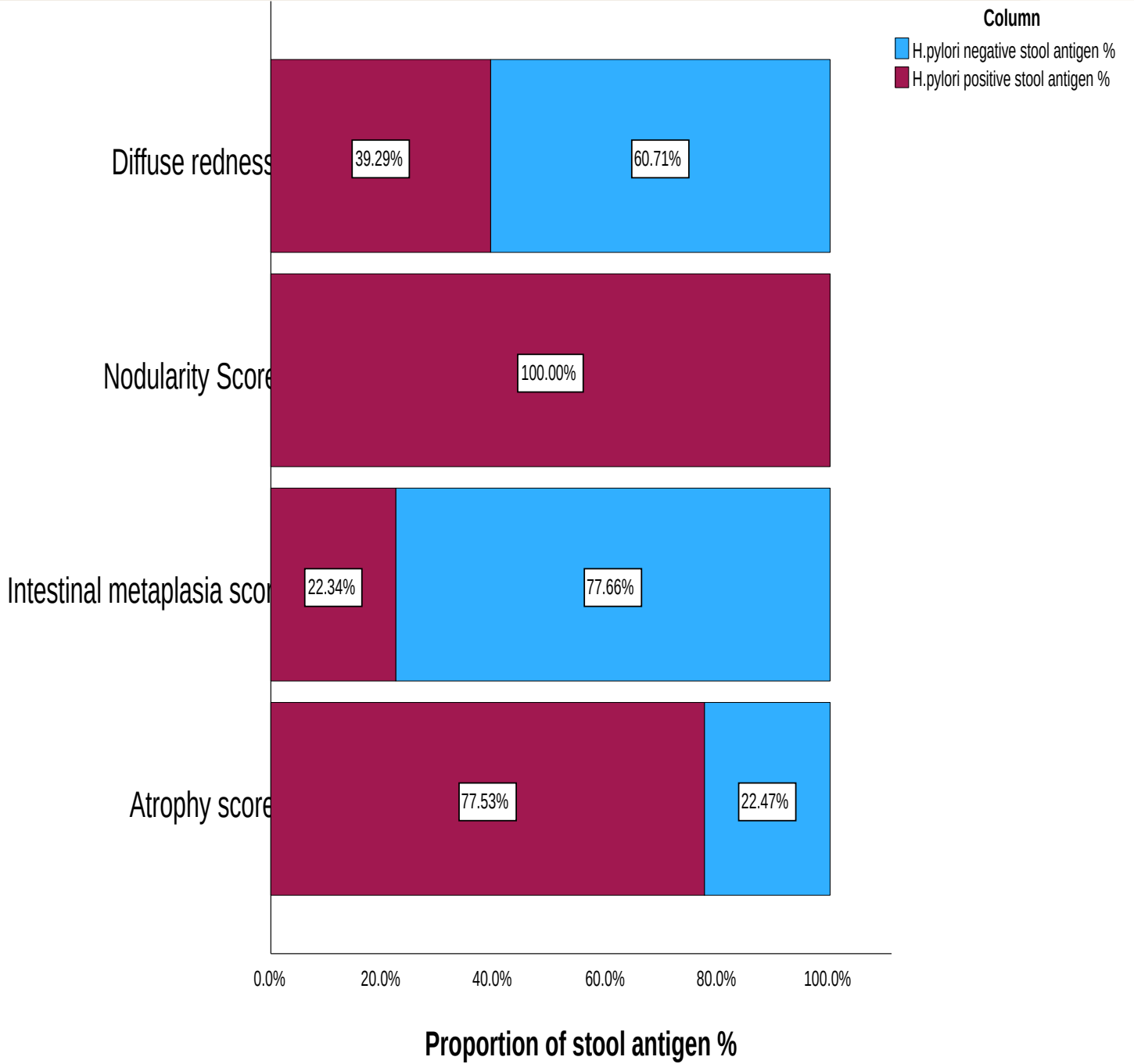
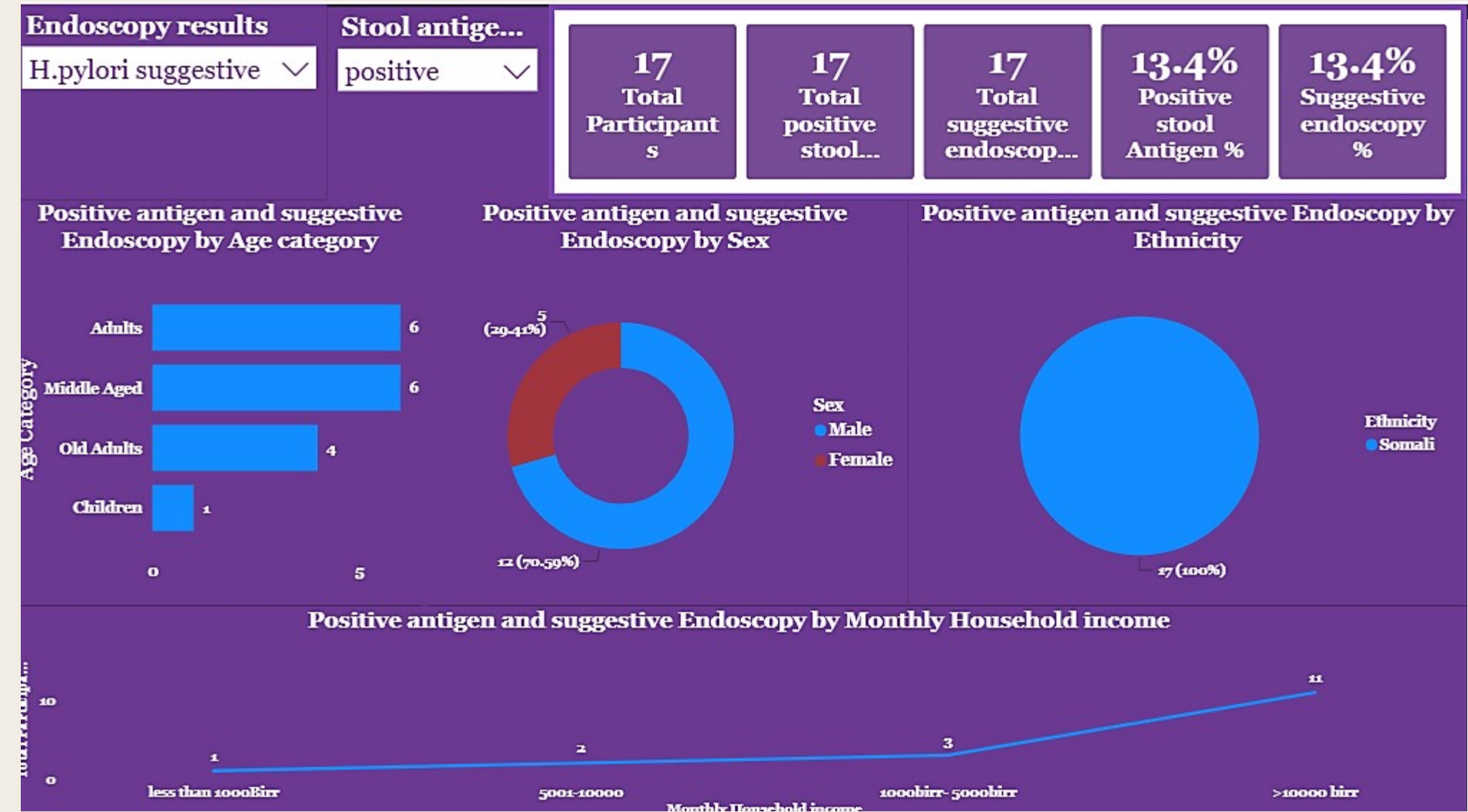


Figure 3 – Cases with both positive serology and suggestive endoscopy, by age, sex, ethnicity and household income (n=17)

Clinical presentation at first referral

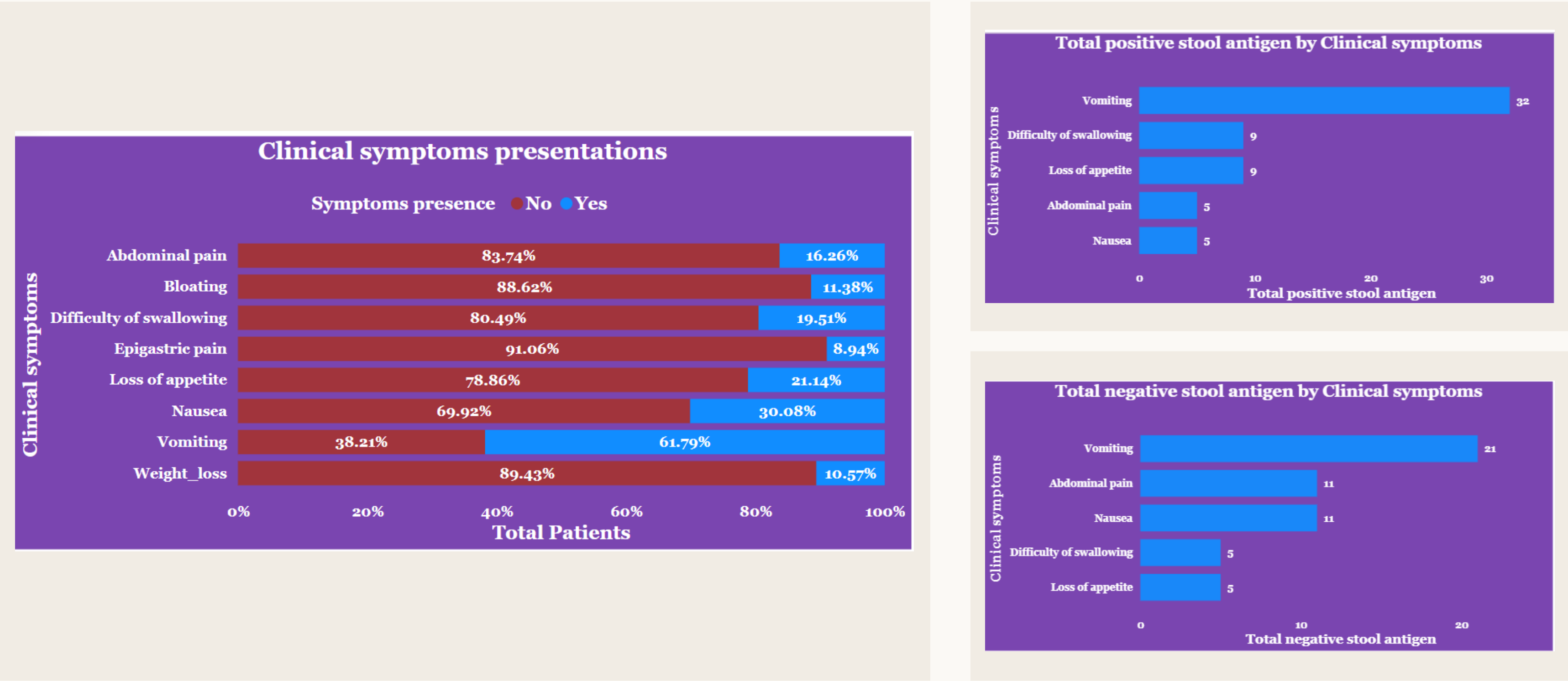


Figure 5 – Symptom presence at first referral (left) and symptom counts by stool-antigen result (right)

RESULTS

Treatment history and symptom recurrence

	Positive n=51	Negative n=44
AMONG ANTIGEN GROUPS		
Previous treatment received	78.4%	52.3%
Improvement then relapse	58.8%	31.8%
Treatment without improvement	25.5%	25.0%
Never treated	11.8%	40.9%
Family history reported	84.3%	36.4%

58.8%

of antigen-positive patients reported initial improvement followed by symptom relapse

Hypertension was the commonest comorbidity (21.6% of the positive group); most patients had none recorded.

Cultural, behavioral and environmental exposures

80.4% of antigen-positive patients drank tap water; 13.7% used river water	75% applied no drinking-water treatment of any kind	70.6% lived in crowded housing — more than three people per room	32.3% reported smoking; alcohol use was rare (3.1% overall)
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DIET

The largest single category among antigen-positive patients was low intake of spicy, oily or salty food (37.3%), followed by high oil intake (15.7%). Overlapping categories prevent isolation of individual exposures.

FOOD HYGIENE

74.5% of antigen-positive patients reported never eating unwashed vegetables, against 25% of negatives — a counterintuitive direction consistent with behavior change after earlier diagnosis.

Psychological and sleep findings

REPORTED EXPERIENCE	All patients	Antigen positive	Antigen negative
Sleep disturbance from stomach illness	55.9%	68.6%	45.5%
Perceived stress—symptom linkage	57.5%	72.5%	50.0%
Mood disturbance	39.4%	49.0%	36.4%
Diagnosed mental health condition	6.3%	—	—

Measured by self-report rather than validated scales.

Bivariable logistic regression

Variables significant at $p < 0.025$ and carried into the multivariable model

VARIABLE	COMPARISON	COR (95% CI)	P
Place of residence	Urban vs Rural	4.78 (1.77–12.93)	.002
Monthly income	1,000–5,000 Birr Vs >10,000	13.65 (2.45–76.09)	.003
Family history	Yes vs No	0.11 (0.04–0.28)	<.001
Abdominal pain	Yes vs no	4.17 (1.27–13.71)	.019
Nausea	Yes vs no	0.21 (0.09–0.52)	<.001
Weight loss	Yes vs no	0.06 (0.01–0.49)	.008
Eating unwashed vegetables	Sometimes vs frequently	9.50 (3.71–24.36)	<.001
Source of drinking water	Tap vs bottled	24.50 (2.83–212.40)	.004
Source of drinking water	Well vs bottled	11.48 (2.41–54.79)	.002

Multivariable Firth logistic regression

Independent predictors of positive stool-antigen status

PREDICTOR	CATEGORY	AOR	95% CI	P
Place of residence	Urban vs rural	22.02	1.67–990.00	.016
Abdominal pain	Yes vs no	8.44	1.32–173.64	.022
Source of drinking water	River	318.94	2.22–179.50	.021
Monthly income	5,001–10,000 Birr	0.19	0.03–0.93	.041
Nausea, weight loss, family history, unwashed vegetables, tap and well water	—	ns	—	>.05

Precision caveat: the confidence intervals for residence and river water span several orders of magnitude. These estimates indicate direction of association, not magnitude, and should be read as exploratory.

Interpretation of the principal findings

01 A substantial service burden, not a community estimate

Two in five investigated patients were positive.

02 The urban association runs against the usual assumption

Perhaps due to:

- Dense household contact
- shared food and drinking practices
- unequal neighbourhood water quality, or greater referral access .

03 Water safety warrants direct investigation

River-water use showed the strongest adjusted association.

04 Limited test agreement is itself a clinical finding

Endoscopic appearance does not demonstrate the organism.
Kyoto scoring supports risk assessment but cannot replace a validated test for active infection.

05 Urgent molecular diagnostic ,susceptibility and resistance studies

Taken together, *H. pylori* illness in this referral population is not driven by any single exposure — it reflects interacting clinical, environmental, socioeconomic, diagnostic, treatment and psychosocial factors.

Strengths and limitations

STRENGTHS

Rare primary clinical evidence from the Somali Region
Domains usually studied separately combined in one cohort
Complete enumeration of all eligible patients
Firth regression appropriate to sparse data and separation

LIMITATIONS

Design	Case-control— Recal bias
Generalisability	Single referral hospital; over-representation of previously treated patients
Precision	Small sample relative to predictors; sparse cells produced very wide intervals
Measurement	32 unknown antigen results; no documented PPI, antibiotic or bismuth washout
Reference standard	No consistent histology, rapid urease, culture or molecular confirmation
Reporting	Self-reported behavioral and psychological variables; some overlapping categories

Conclusion

- 40.2%** of patients undergoing upper GI evaluation were stool-antigen positive — a substantial clinical burden for a newly established gastroenterology service
- 13.4%** were concordant on both tests, demonstrating that endoscopic appearance and antigen testing give related but non-interchangeable information
- 4** independent associations — urban residence, abdominal pain, river-water use and one income band — all to be read as exploratory given wide intervals
- 78.4%** of positive patients had been treated before, most with relapse — identifying a gap in treatment documentation and post-treatment confirmation

Recommendations

Prioritize a practical test-treat-confirm pathway

01 HOSPITAL

Standardize care Protocols

Use of integrated diagnostic and treatment approach based on the 4 socio-cultural and behavioral determinants

Confirm eradication

Document test-of-cure after every treatment.

Close reporting gaps

Track regimen, adherence, outcomes and biopsy results.

02 HEALTH AUTHORITIES

Protect water safety

Assess sources, storage and household treatment.

Strengthen prevention

Expand safe-water, hand and food-hygiene education.

Improve system readiness

Build resistance surveillance and equitable testing access.

03 FUTURE RESEARCH

Improve representativeness

Use larger multicentre studies with rural-urban balance.

Standardize measurement

Document medication washout and active-infection testing.

Clarify long-term outcomes

Track failure, recurrence, reinfection and quality of life.

Immediate priority

Reliable diagnosis → documented treatment → confirmed cure

ACKNOWLEDGEMENT

Thank you
Any Questions?

Questions and comments are welcome

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