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Motivations, perceptions, and barriers to gastric cancer screening among communicatively vulnerable adults in Belgium and the Netherlands: Insights from the TOGAS project

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Abstract

Background: Gastric cancer (GC) is a major health concern in Western Europe, with *Helicobacter pylori* infection contributing to its development. This study examines the perceptions and barriers to GC screening in the Netherlands and Belgium, focusing on cognitively or communicatively vulnerable populations with low health literacy.

Methods: A qualitative approach within the TOGAS project assessed motivations, perceptions, and barriers to GC screening in vulnerable groups through focus group discussions (FGD) in the Netherlands and Belgium between April and June 2025. Grounded theory was used for data analysis.

Results: Seventy-nine participants took part in the FGDs. A preference for non-invasive screening methods, particularly breath tests (n=48), was expressed. Recommendations of healthcare providers played a key role in decision-making. Language barriers and low health literacy affected understanding of screening and willingness to engage, with many relying on family or community groups for support.

Conclusion: This study highlights the importance of considering (health) literacy, and cultural context in designing GC screening for vulnerable populations. Non-invasive methods like breath tests are preferred, and trust in healthcare professionals is essential for accepting invasive procedures. Tailored educational materials and trusted guidance are key to improving screening participation.

Introduction

Gastric cancer (GC) remains a major public health challenge across Europe, despite an overall global decline in incidence [1]. Within the European Union (EU), the burden of GC varies considerably: countries such as the Netherlands and Belgium exhibit low incidence rates, whereas Romania continues to experience substantially higher rates, reflecting broader regional patterns across Central and Eastern Europe [2–4].

These cross-country differences are closely linked to well-established risk factors for GC. Chronic infection with *Helicobacter pylori* (*H. pylori*), classified by the World Health Organization as a Group I carcinogen, is the principal driver of non-cardia GC and contributes substantially to geographic variation in incidence [5]. Gastric carcinogenesis generally follows a stepwise progression of chronic inflammation toward neoplastic change [6]. These precursor conditions frequently remain undiagnosed, particularly in populations with limited healthcare access or low health literacy. Moreover, increasing age, particularly beyond 50 years, and a positive family history of GC further elevate individual risk [7, 8].

Despite the strong evidence linking these risk factors to gastric carcinogenesis, no EU member state currently implements an organised population-based GC screening programme, in contrary to several countries in Asia [7]. Ongoing policy discussions within the European Council have recently considered whether GC screening may be appropriate for higher-risk EU populations [4].

Communicatively vulnerable populations, including socioeconomically disadvantaged adults, migrants, ethnic minorities and individuals with low health literacy face disproportionate barriers to prevention and early detection [9]. These populations might have lower awareness of GC risk factors or screening techniques reduced trust in healthcare institutions, and limited experience with preventive care pathways [9]. Given that GC risk is often elevated in groups with higher *H. pylori* prevalence or greater structural disadvantages, understanding their perceptions and willingness to participate in potential screening is essential for designing equitable prevention strategies [10, 11]. As part of the TOGAS initiative, a multi-country qualitative study was designed to assess motivations, perceptions, and interests in GC screening among communicatively vulnerable adults. Conducted in three countries representing different epidemiological and social contexts; Romania, Belgium, and the Netherlands, the study aimed to explore the motivations, concerns, and decision-making processes that influence whether individuals from communicatively and cognitively vulnerable groups choose to participate in GC screening. This paper focused on the findings from the Dutch and Belgium component of work package 5.6 of the TOGAS project. By examining the motivations, concerns, and factors influencing participation among communicatively vulnerable adults, this study provides key insights for developing equitable and acceptable GC screening approaches in Europe.

Methods

This qualitative, co-creative focus group study aimed to explore attitudes, motivations, and preferences regarding GC screening among cognitively and communicatively vulnerable adults. A focus group approach was selected because language and literacy barriers may have limited participants' ability to complete a survey [12]. In the Netherlands, 4 sessions were moderated by N.K. (female; ongoing PhD and Gastroenterology researcher) 4 sessions by N.K. and T.G. (female; health communication researcher). In Belgium, T.G. and M.v.L. (male; cancer screening researcher) moderated all 8 sessions.

Participant selection and recruitment

Participants were adults identified as contextually vulnerable, namely cognitively or communicatively vulnerable, encompassing persons who have difficulties comprehending information and making decisions about participation [13]. Vulnerability was determined based on characteristics such as communicative limitations, low literacy, and barriers to healthcare access. Convenience sampling was applied in both countries, making use of existing classroom settings. In the Netherlands, participants were recruited through Alsare, a language school in Rotterdam, while in Belgium recruitment was conducted in collaboration with Ligo, a network of adult education centres. Participants were ≥ 18 years old, able to participate in Dutch group conversations, and willing to provide verbal informed consent. Focus group discussions (FGDs) were conducted within existing community groups at their regular meeting time and location to minimise logistical barriers.

Study format and session rationale

Before data collection, the interviewers established a relationship with teachers and participants by attending and observing regular class settings. This allowed the interviewers to introduce themselves, build trust, explain upfront what the purpose of study would be and clarify why they would like to conduct it.

Each data collection cycle consisted of a 30–45 minute plain-language structured information session, followed by a 60–90 minute FGD, held within one week. This two-step approach enhanced meaningful participation of adults with varying health literacy levels. The information session covered key concepts on health, lifestyle, nutrition, interactions with healthcare professionals, GC, and related risk factors to establish a shared baseline of understanding. It also allowed assessment of participants' language proficiency, vocabulary, sociodemographic characteristics, and health literacy to tailor the subsequent FGD. Participants were asked about family situation (e.g., children, marital status), age, and duration of residence in the Netherlands to better understand social context, support networks, access to healthcare, and previous participation in cancer screening. In total, 4 information sessions and 4 FGDs were conducted at 2 locations in Rotterdam (June–July 2025) and 4 information sessions and 4 FGDs at 4 locations in Antwerp (April–June 2025). The FGDs explored beliefs and perceptions regarding GC screening, motivations and barriers to participation, communication preferences for medical information, and GC screening test preferences.

Educational materials contained minimal text and relied mainly on visual prompts. Materials included simplified text, visual explanations of stomach anatomy, and neutral prompts related to lifestyle, diet, prevention, medical treatments, and screening options. All materials were co-created by the research team, clinical experts, and class teachers to ensure accessibility, medical accuracy, and alignment with CEFR A1–A2 comprehension levels for Dutch. The topic guides for both the information sessions and FGDs were specially developed for this study by Thomas More University of Applied Sciences in co-creation with Ligo teachers. English versions are provided as Supplementary File 1 and 2.

Sessions were audio-recorded with permission, and an anatomical doll and colorectal cancer screening kit were used to facilitate discussion. The group's regular teacher acted as a facilitator, guiding the discussion without influencing responses. The TOGAS moderator ensured the discussion remained focused, encouraged participation from all group members, and clarified questions when necessary. Field notes created during the sessions helped understand class dynamics and non-verbal interactions.

Data handling and analysis

Audio recordings were transcribed verbatim using Amberscript (https://www.amberscript.com/), checked for accuracy, and de-identified prior to analysis. Transcripts were not returned to participants for feedback or correction, due to their low proficiency in Dutch. Coding was performed in Taguette (https://www.taguette.org). Analysis followed a modified grounded theory approach, building theory inductively from the data rather than applying predefined frameworks, consistent with Glaser and Strauss [12]. Open, axial, and selective coding of Belgian transcripts was performed independently by

T.G. and M.v.L, and of Dutch transcripts by N.K., T.G., and M.v.L., supported by constant comparison and memo writing to identify emerging themes. Data collection continued until analysis proved that theoretical saturation was reached, defined as no new themes emerging. The researchers engaged in regular discussions to align coding processes, resolve disagreements, and jointly develop a unified coding tree that accurately reflects the richness of the data.

The study followed the Consolidated Criteria for Reporting Qualitative Research (COREQ) 32-item checklist to ensure methodological rigour and transparent reporting (Supplementary Table 1) [14].

Results

Demographic characteristics

In total, 8 information sessions and 8 FGDs were conducted in Belgium and the Netherlands. Overall, 83 unique participants were included in the study, of which 79 attended the FGDs. Fourteen participants attended either the information session or FGD, while 69 attended both. No participant actively withdrew from study participation, but non-attendance of either session was primarily due to personal circumstances (e.g. having an appointment, being ill). Slightly more females (n = 46; 55.4%) than males (n = 37; 44.6%) participated in the study. The mean (SD) age was 42.4 (11.2) years. Participants had been living for a median (IQR) of 6 (6) years in Belgium or the Netherlands at the time of the study and 68 (81.9%) participants had children. Demographic characteristics are presented in Table 1. Participants migrated from a wide range of countries (see Fig. 1).

Table 1

Demographic characteristics. *Number of years living in Belgium was not assessed in 1 Belgian group, resulting in missing data for 12 participants. **In one of the Belgian focus group discussions (FGDs), a participant left during the break. All topics addressed after the break in the FGDs were therefore discussed with 50 instead of 51 participants in Belgium, and with 78 instead of 79 participants in total.

Mean (SD) age (years)		**Belgium**	**The Netherlands**	**Total**
		42.4 (11.5)	**42.4 (10.7)**	**42.4 (11.2)**
Median (IQR) number of years living in Belgium or the Netherlands (years)		*5 (4)	6.5 (5)	6 (6)
Number of unique participants included (n (%))				
	Male	29 (34.9)	8 (9.6)	37 (44.6)
	Female	26 (31.3)	20 (24.1)	46 (55.4)
	Total	55 (66.3)	28 (33.7)	83 (100)
Number of participants attending (n (%))				
	Information session	45/55 (81.8)	28/28 (100)	73/83 (88.0)
	Focus group discussion	**51*/55 (92.7)	28/28 (100)	**79*/83 (95.2)
	Both information session and focus group discussion	41/55 (74.5)	28/28 (100)	69/83 (83.1)
Number of participants having children (n (%))				
	Yes	44/55 (80.0)	24/28 (85.7)	68/83 (81.9)
	No	11/55 (20.0)	4/28 (14.3)	15/83 (18.1)

Lifestyle, health behaviour, and health awareness

Participants generally consumed fruits and vegetables frequently, with some eating them daily. Most participants did not consume alcohol, primarily due to religious motivations, while it was recognized as being unhealthy. Participants engaged in (daily) physical activities, such as going for a walk, doing yoga or playing football (or another sport), either alone, in group, or with their children. Participants indicated that excessive sleep was often linked to feelings of tiredness or illness and was consequently perceived as unhealthy. Most participants slept less than 8 hours per night, needing to get up early for morning

prayer or preparing children for school. Tobacco intake during smoking was reported for some participants, which was linked to experiencing stress. It was also mentioned that smoking was not healthy.

Participants had prior experiences with being ill and recognized different types of illnesses on images: having a headache, stomach pain, back pain or a common cold. Participants associated being ill with stress or, in case of stomach aches, with food intake. They were familiar with doctors, nurses and ambulances, and almost all participants had their own GP or family doctor.

'Smoking is bad. […] drinking water is good, smoking is not.

– Male, 52 years old

Hygiene and prevention habits

When shown images of bacteria and viruses, participants recognized them as disease carriers. The word 'virus' was associated to the COVID-19 pandemic, which consequently remembered participants about the need to wear a mouth mask to prevent the spreading of the virus through the air.

Preventive behaviour at home was often described in practical terms, such as cleaning the house or kitchen (after cooking) to prevent disease spreading. Participants agreed that fruits and vegetables were to be washed (by some respondents in vinegar or with salt) before consumption or preparation, acknowledging it would prevent disease carriers from spreading and consequently, prevent the risk of developing stomach cancer (after the relationship between bacteria [*H. pylori*] and stomach cancer was explained by the researchers).

'You need to wash the hands.

– Female, 43 years old

Communication, reading aids, and interaction with healthcare professionals

Participants had varying levels of confidence in speaking Dutch, with language barriers affecting communication with healthcare professionals, understanding written health information, and making medical appointments.

Preferences for communication channels differed by situation but showed consistent patterns. Face-to-face communication and phone contact were preferred, particularly because they allowed participants to ask questions and receive explanations. However, some Dutch participants preferred e-mail contact over telephone calls, and it was mentioned that in some cases it was obligated to make doctor appointments online. Written communication, including letters and emails, was often described as (too) difficult to

understand. Many participants reported relying on partners, children, extended family, or digital tools (e.g. translation apps) to interpret written health information that is too difficult for them to comprehend. Some women did not have their own e-mail addresses but used their partners' email address instead.

While practising reading in the classroom, it appeared that the current invitation letter for colorectal cancer screening in Belgium and the Netherlands, it was apparent that the written language was too difficult to understand, images and logos were not immediately clear, and the general purpose of the letter was not well understood. Participants indicated that they would bring the letter to their class [i.e. at Ligo or Alsare] or ask their GP or family doctor for explanation.

Trust in medical staff, particularly general practitioners, was frequently highlighted as an important factor in communication and decision-making.

'E-mail is better. But… e-mail is better. Through telephone is just… He can talk really fast. You can't hear it properly. Or understand it. And he won't keep repeating it.

– Female, 28 years old

Experiences with and perceptions of medical examinations and cancer

Most participants had prior experiences with medical examinations, especially during routine check-ups at the GP, but also during medical interventions in hospital settings. Familiar interventions included blood sampling, blood donations (during Ramadan), X-ray procedures, hospital visits and emergency care.

Participation in GC screening modalities and gastroscopy was discussed in relation to perceived difficulty, fear, and importance. Fear and discomfort were frequently mentioned, particularly in relation to unfamiliar or invasive procedures. At the same time, several participants emphasized the importance of medical procedures when they were framed as necessary for their health. Familiarity with certain procedures, particularly blood tests, influenced perceptions and preferences of *H. pylori* testing methods. For example, blood draws were perceived to be scary by some, influencing their decision for screening test preference.

Several participants had prior experiences with UGIE procedures, either with or without anaesthesia. When shown real-world images of cancer within the stomach, most participants did not recognise the tumour, thinking it was food or fat instead. Two participants above 50 years of age indicated that they had been previously invited, by letter, to participate in the colorectal cancer screening programme. While one participant participated regularly, another did not fully understand how to participate and why. Many participants had previous experiences with cancer, primarily in family members or relatives (in their country of origin).

'Large check-up, big hospital. Every year we work, there's always a check-up. Blood draws or pee or stool…

– Male, 57 years old

'Me too. Just a camera to look inside the stomach.

– Male, 53 years old

Perceptions and preferences regarding H. pylori testing

Different *H. pylori* testing options, including breath tests, blood tests, and stool tests were explained to participants, after which preferences were asked, including rationale. In the section below, test preferences were obtained for 78 participants instead of 79, since 1 participant left the FGD before this topic was addressed.

Overall, the breath test was most frequently preferred (48/78) (see Table 2). It was commonly preferred because it is perceived to be quick and minimally invasive. Blood testing was preferred by a smaller group (20/78) linked to high familiarity with blood tests (e.g. annual check-ups) and the underlying assumption that blood sampling equals broad diagnostic testing of health indicators (such as cholesterol, vitamins or blood sugar), instead of only testing for *H. pylori* antigens. For that reason, most participants initially opted to choose this test. However, when it was explained that the sole focus of the blood test was to detect *H. pylori* presence, some participants altered their choice and switched to the breath test. Barriers to blood tests included fear of needles and negative prior experiences. The stool test was least preferred (6/78) and was frequently associated with concerns about hygiene and practicality. Those who did prefer the test, argued that the stool sample could be collected at home, without the need to visit a hospital. Overall, 4 participants had no specific preference. Even though all participants in the Netherlands indicated their preferred test method, they were all willing to undergo or perform either test, if their doctor would advise them to.

Regardless of *H. pylori* screening test method, almost all participants were willing to participate in any form of *H. pylori* testing when medical professionals advise them to, as it would benefit their own health.

'[Being] healthy is important. If the doctor tells me to do it, I will do it.

– Male, 58 years old

'One [breath test] is easy for me. Two [blood test] is erm, difficult and stressful for me. Three [stool test] erm, I don't like this. Only [option] one is clear.

– Male, 34 years old

Willingness to undergo Upper gastrointestinal endoscopy

In general, the willingness to undergo upper gastrointestinal endoscopy (UGIE) was high across all groups (see Table 2). Participants acknowledged the procedure, including sedation, as unpleasant, scary or uncomfortable, particularly when drawing on previous experiences, either from their family members or themselves. Nevertheless, willingness to participate was strongly linked to the authority and advice of medical professionals, like GPs. In Belgium, trust in the GP was particularly prominent, while in the Netherlands authority was described as important but somewhat less dominant.

'[…] but that camera inside of me, I really don't like that. Yes, we should do it, but I don't want to.

– Male, 57 years old

'At the beginning, there was always… Stomach problems. And then they looked inside of the stomach with pictures.

– Male, 43 years old

'I never did it, but if the doctor says I should do it, I will do it.

– Male, 42 years old

Table 2

Gastric cancer screening test preferences and willingness to undergo an upper gastrointestinal endoscopy (UGIE). n=number of respondents present at the voting round in the FGD. *UGIE willingness was not assessed in group NL4 due to a participant's emotional reaction, as their father recently passed away from gastric cancer after seeking late medical help. **Total percentage of participants willing to undergo UGIE in the Netherlands is based on a total of n = 23 participants, since willingness was not assessed for n = 5 participants in group NL4.

Belgium	**Focus group number (n)**	**Breath test** (n)	**Blood test** (n)	**Stool test** (n)	**Either test** (n)	**UGIE willingness** (n)
	BE1 (n = 11)	3	6	2	0	11
	BE2 (n = 14)	11	3	0	0	14
	BE3 (n = 13)	3	6	0	4	13
	BE4 (n = 12)	5	3	4	0	11
	Total (n = 50)	22	18	6	4	49
The Netherlands						
	NL1 (n = 4)	3	1	0	0	3
	NL2 (n = 9)	9	0	0	0	8
	NL3 (n = 10)	10	0	0	0	9
	NL4 (n = 5)	4	1	0	0	*Not assessed
	Total (n = 28)	26	2	0	0	**20
All groups						
	Total (n = 78)	48	20	6	4	69

Discussion

This qualitative study examined perceptions, beliefs and factors influencing diagnostic test preferences for GC screening among communicatively vulnerable adults in Belgium and the Netherlands. Participants showed a clear preference for non-invasive screening options, most often the breath test, while UGIE was generally considered acceptable only if recommended by the GP. Preferences were shaped by language proficiency, trust in healthcare providers, participants' own experiences and support from educators during decision-making. These findings highlight the importance of integrating health literacy and cultural context when designing screening strategies for populations with limited access to healthcare.

A key finding was the heterogeneity in language proficiency among participants, reflecting the ethnically diverse composition of the study population and patterns observed in broader migrant communities. Ethnic minority groups frequently face distinct challenges within healthcare systems, including reduced access to information, cultural barriers, and lower institutional trust [15–17]. Consistent with previous research, limited language proficiency and lower health literacy were associated with reduced engagement in healthcare decision making and poorer health outcomes [18, 19]. In this study, confidence in speaking Dutch was a key factor in decision-making participation. Participants with higher language confidence were more active, asked more questions, and expressed concerns openly, leading to more informed choices. This supports existing links between language proficiency, health literacy, and patient engagement [15–20].

Moreover, participants frequently relied on family members, including spouses and children, or neighbours, as informal interpreters during medical consultations. This practice, commonly referred to as language brokering, has been widely described in healthcare settings, particularly in paediatric care, where studies indicate that physicians often depend on untrained interpreters to communicate with patients facing language barriers [21]. Although this approach may facilitate immediate communication, it remains associated with substantial risks for misunderstanding, as both healthcare providers and patients report difficulties in achieving accurate information exchange in the absence of professional interpretation [21, 22]. Child brokering, in particular, introduces additional challenges, as children may struggle with complex medical terminology and ethical dilemmas while translating for their parents [23]. Studies also demonstrate that when patients and healthcare providers speak the same language, this language concordance is associated with increased interpersonal trust, higher patient satisfaction, and improved understanding of health information [24]. Consistent with this, adapting educational materials to language proficiency through simplified wording and visual support can enhance understanding and engagement, particularly among individuals with limited language skills [25].

Trust in healthcare providers, particularly general practitioners (GPs), was another significant factor in participants' decision-making. In our study participants who trusted their GP were more likely to accept diagnostic tests, including invasive procedures even if they involved greater discomfort, if recommended by the GP. Trust in healthcare professionals has been well-documented as a key factor in fostering active patient engagement [17, 26]. This highlights the crucial role healthcare providers play in facilitating informed decisions by addressing cultural and linguistic preferences, which improves trust, engagement, and reduces barriers in care [27].

Participants demonstrated a clear preference for non-invasive diagnostic approaches, particularly breath testing, consistent with previous studies showing that patients favour tests perceived as low risk and convenient [28]. The urea breath test was especially preferred because of its perceived accuracy and ease of use in detecting *H. pylori* infection, one of the biggest risk factors for GC [29]. Although other non-invasive options were available, preferences appeared to depend not only on invasiveness but also on perceived informational value and practical burden, suggesting that acceptability is shaped by how patients interpret the purpose and usefulness of a test. Notably, these preferences align with European

recommendations, including the Maastricht VI Florence Consensus, which identifies the urea breath test as the diagnostic gold standard because of its high diagnostic accuracy [30]. Despite an overall preference for non-invasive testing, many participants indicated willingness to undergo UGIE when recommended by their general practitioner, reinforcing the role of clinician trust and the importance of their health in facilitating acceptance of more invasive diagnostic strategies [31, 32].

Education played a central role in shaping participants' engagement and preferences. An initial information session using simplified visual materials, including anatomical models and pictorial explanations, ensured a shared baseline understanding of GC, associated risk factors, and available diagnostic options prior to preference discussions. Such approaches may help mitigate health literacy barriers by making complex medical information more accessible, consistent with evidence demonstrating that visual aids improve comprehension, particularly among individuals with lower literacy levels [33, 34]. The presence of a familiar teacher acting as a neutral facilitator further supported open discussion and active participation in screening decision making [34]. However, the possibility of facilitator influence on participants' responses cannot be excluded, although the extent of this effect remains uncertain.

This study has several limitations. First, the use of convenience sampling within pre-existing classroom groups may have introduced selection bias and limited generalizability, as group composition and participant attendance were not controlled and individuals who were more engaged or motivated may have been overrepresented. Second, language proficiency and health literacy were not systematically measured, restricting the ability to quantify their influence on comprehension and decision making. Third, although the teacher acted as a neutral facilitator, moderator influence and potential group dynamics, including follow behaviour during preference discussions, cannot be excluded. In addition, participants' understanding of diagnostic options was not formally verified, which may have affected preference formation. Future research should assess the feasibility of addressing these methodological considerations to potentially strengthen interpretation of patient preferences.

In conclusion, this study demonstrates that diagnostic preferences for GC screening among communicatively vulnerable adults are shaped by interacting linguistic, relational and educational factors. Participants favoured non-invasive approaches, particularly breath testing, primarily due to perceived safety and practicality, while trust in healthcare providers facilitated acceptance of more invasive procedures when recommended. Structured education and visual communication supported informed decision making by reducing health literacy barriers. Together, these findings emphasize that effective screening strategies extend beyond test performance alone and require culturally and linguistically responsive communication approaches to support equitable participation in diverse populations.

Abbreviations

BUN

Belgian unique number
CEFR
Common European Framework of Reference for Languages
COREQ
Consolidated Criteria for Reporting Qualitative Research
EU
European Union
FGD
Focus group discussion
GC
Gastric cancer
GP
General practitioner
H. pylori
Helicobacter pylori
HaDEA
European Health and Digital Executive Agency
IQR
Interquartile range
MEC
Medical Ethics Committee
SD
Standard deviation
TOGAS
Towards Gastric Cancer Screening Implementation in the European Union
UGIE
Upper gastrointestinal endoscopy

Declarations

Ethics approval and consent to participate

Ethical approval was obtained from the Erasmus Medical Centre Ethics Committee (MEC-2025-0203) for the Dutch protocol and from the University Hospital Antwerp Ethics Committee (29 July 2024; Project ID 6779, BUN B3002024000130) for the Belgian protocol. The study was conducted in accordance with the Declaration of Helsinki. All participants provided verbal informed consent before participation. Participation was voluntary, sessions were audio-recorded with permission, and participants could withdraw at any time without consequences.

Consent for publication

Not applicable

Availability of data and materials

The datasets generated and analysed during the current study are not publicly available due to privacy and confidentiality restrictions. The data consist of focus group transcripts, field notes and coding materials, which may contain information that could indirectly identify participants. De-identified data may be made available from the corresponding author upon reasonable request, subject to ethical approval, participant confidentiality, and applicable data protection regulations.

Competing Interests

The authors declare that they have no competing interests.

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Authors' contributions

T.G., N.E.A.K. and M.v.L. contributed to the conception and design of the study, participant recruitment and inclusion, data collection, coding, qualitative data analysis, interpretation of the findings, and drafting of the manuscript. T.G. and M.v.L. developed the original study materials. N.E.A.K. adapted the study materials for the Dutch setting and submitted the study protocol.
R.A.F. and D.L.D. contributed as Romanian study partners, were involved in the Romanian component of the study, supported the interpretation of the findings, and critically revised the manuscript for important intellectual content.
J.H. and V.M.C.W.S. supervised the study, contributed to the interpretation of the findings, and critically revised the manuscript for important intellectual content. M.L. provided overall supervision within the European study, contributed to the interpretation of the findings, and critically revised the manuscript for important intellectual content. W.v.d.V. and J.T. contributed to study coordination, supported the interpretation of the findings, provided substantive input on the study design and manuscript structure, and critically revised the manuscript for important intellectual content.

All authors reviewed and approved the final manuscript and agreed to be accountable for all aspects of the work.

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References

1. Bray F et al. *Global cancer statistics 2022: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries.* CA: A Cancer Journal for Clinicians, 2024. 74(3): pp. 229–63.
2. Sung H et al. *Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries.* CA: A Cancer Journal for Clinicians, 2021. 71(3): pp. 209–249.
3. Cancer I. A.f.R.o. *Country Cancer Fact Sheets: Netherlands, Belgium, Romania*. 2023 24-11-2025]; Available from:: https://gco.iarc.fr/today
4. Leja M. Where are we with gastric cancer screening in Europe in 2024? Gut. 2024;73(12):2074–82.
5. Hooi JKY, et al. Global Prevalence of Helicobacter pylori Infection: Systematic Review and Meta-Analysis. Gastroenterology. 2017;153(2):420–9.
6. Correa P, Piazuelo MB. The gastric precancerous cascade. J Dig Dis. 2012;13(1):2–9.
7. Dinis-Ribeiro M, et al. Management of epithelial precancerous conditions and early neoplasia of the stomach (MAPS III): European Society of Gastrointestinal Endoscopy (ESGE), European Helicobacter and Microbiota Study Group (EHMSG) and European Society of Pathology (ESP) Guideli. Endoscopy. 2025;57(05):504–54.
8. Zhang T, Zhang Y, Leng X. Global, regional, and national trends in gastric cancer burden: 1990–2021 and projections to 2040. Front Oncol, 2024. 14.
9. Van Der Heide I, et al. Health literacy and informed decision making regarding colorectal cancer screening: a systematic review. Eur J Public Health. 2015;25(4):575–82.
10. TOGAS. Project Description. 2024 [cited 2025; Available from: https://togas.digestivecancers.eu/
11. TOGAS. TOGAS. 2023 [cited 2025; Available from: https://health.ec.europa.eu/non-communicable-diseases/cancer/europes-beating-cancer-plan-eu4health-financed-projects/projects/togas_en
12. Mortelmans D. Handboek kwalitatieve onderzoeksmethoden. Acco; 2013.
13. Gordon BG. Vulnerability in Research: Basic Ethical Concepts and General Approach to Review. Ochsner J. 2020;20(1):34–8.
14. Allison Tong PS, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int J Qual Health Care. 2007;19(6):349–57.
15. Pardhan S et al. Barriers and facilitators for engaging underrepresented ethnic minority populations in healthcare research: an umbrella review. Int J Equity Health, 2025. 24(1).
16. Macias-Konstantopoulos WL et al. Race, Healthcare, and Health Disparities: A Critical Review and Recommendations for Advancing Health Equity. Western J Emerg Med, 2023. 24(5).

17. Dennis P, Andrulis CB. Integrating Literacy, Culture, and Language to Improve Health Care Quality for Diverse Populations. Am J Health Behav, 2016.
18. Janet N, Chu US, Natalie A, Rivadeneira RA, Hiatt, Elaine C, Khoong. Impact of language preference and health literacy on health information-seeking experiences among a low-income, multilingual cohort. Patient Educ Couns; 2022.
19. Shamsi HA. A.G.A., Sulaiman Al Mashrafı, Talib Al Kalbani, *Implications of Language Barriers for Healthcare: A Systematic Review*. Oman Med J.; 2020.
20. Joann Seo MSG, Politi M, Blanchard M, Kaphingst KA. Effect of Health Literacy on Decision-Making Preferences among Medically Underserved Patients. Med Decis Making; 2017.
21. Kuo DZ, et al. Pediatricians' Use of Language Services for Families With Limited English Proficiency. Pediatrics. 2007;119(4):e920–7.
22. Lance Patak AW-S, Costello J, Kleinpell RM, Henneman EA. Colleen Person, Mary Beth Happ. Improving Patient-Provider Communication: A Call to Action. J Nurs Adm; 2010.
23. Iqbal H, Crafter S. Child Language Brokering in Healthcare: Exploring the Intersection of Power and Age in Mediation Practices. J Child Fam stud. 2023;32(2):586–97.
24. Lopez Vera A, et al. A Case Study of the Impact of Language Concordance on Patient Care, Satisfaction, and Comfort with Sharing Sensitive Information During Medical Care. J Immigr Minor Health. 2023;25(6):1261–9.
25. Muscat DM, et al. Health Literacy and Shared Decision-making: Exploring the Relationship to Enable Meaningful Patient Engagement in Healthcare. J Gen Intern Med. 2021;36(2):521–4.
26. Vélez C, Kirwan C, Chan WW. Speaking Their Language: Gastrointestinal Testing in Patients with Limited English Proficiency. Dig Dis Sci. 2023;68(3):718–9.
27. Vandecasteele R et al. Trying to write a story together: general practitioners' perspectives on culturally sensitive care. Int J Equity Health, 2024. 23(1).
28. Bertrand T et al. Patient and physician preferences for non-invasive diagnostic cardiovascular imaging technologies: a discrete choice experiment. J Patient-Reported Outcomes, 2022. 6(1).
29. Vakil N. Peptic Ulcer Disease. JAMA. 2024;332(21):1832.
30. Malfertheiner P, et al. *Management of < i>Helicobacter pylori* infection: the Maastricht VI/Florence consensus report. Gut. 2022;71(9):1724–62.
31. Birkhäuer J, et al. Trust in the health care professional and health outcome: A meta-analysis. PLoS ONE. 2017;12(2):e0170988.
32. Barton JL, et al. English Language Proficiency, Health Literacy, and Trust in Physician Are Associated with Shared Decision Making in Rheumatoid Arthritis. J Rhuematol. 2014;41(7):1290–7.
33. Waddell A et al. Barriers and facilitators to shared decision-making in hospitals from policy to practice: a systematic review. Implement Sci, 2021. 16(1).
34. Galmarini E, Marciano L, Schulz PJ. The effectiveness of visual-based interventions on health literacy in health care: a systematic review and meta-analysis. BMC Health Serv Res, 2024. 24(1).

Figures

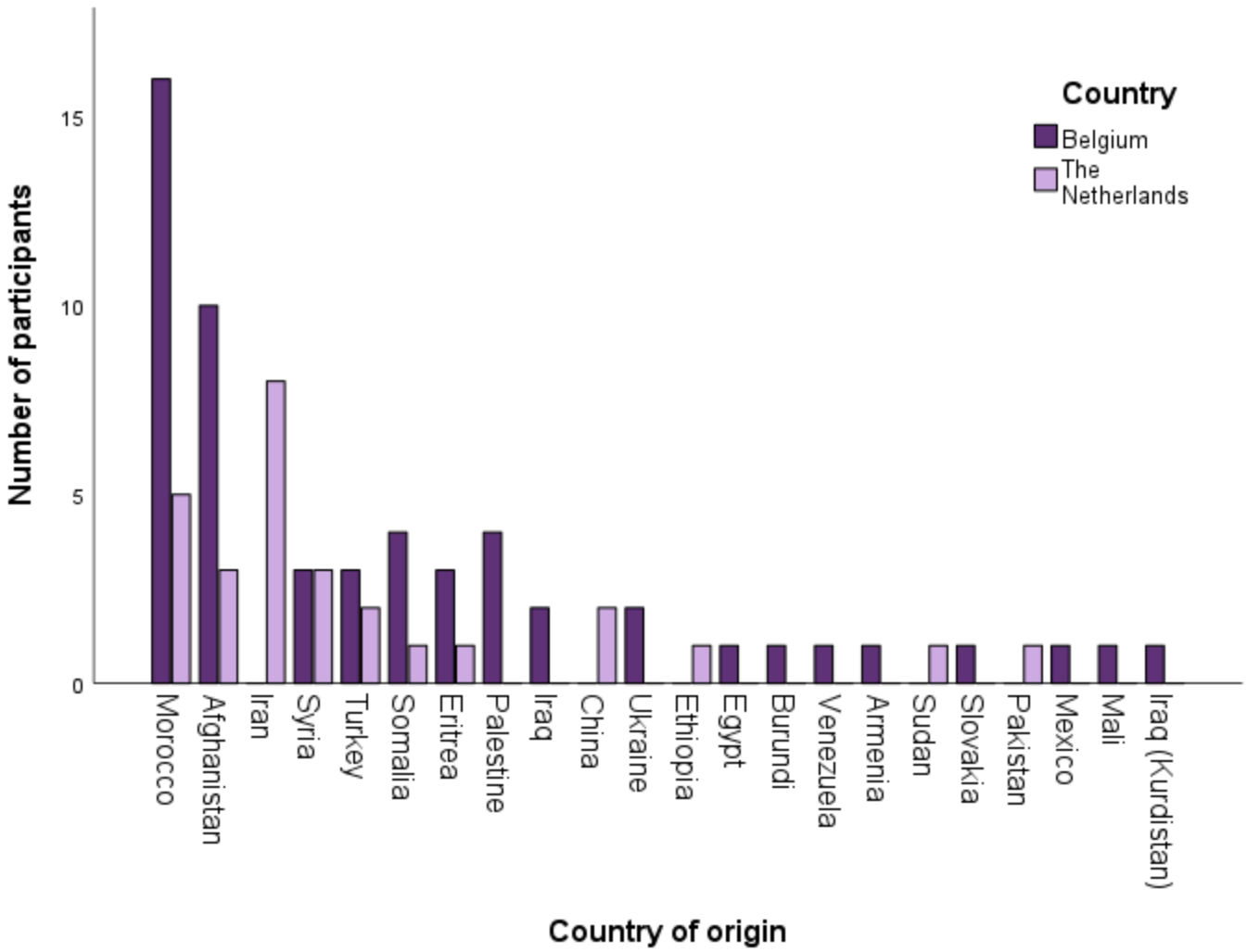


Figure 1

Country of origin of all participants (n=83), split by country of recruitment. Most participants migrated from Morocco (n=21), followed by Afghanistan (n=13), Iran (n=8), and Syria (n=6). All other countries were represented by at most 5 participants each.

Supplementary Files

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- SupplementaryFile1.docx
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