Master's thesis to obtain the degree of Master in

THE INFLUENCE OF HEALTH LITERACY AND SELF-STIGMATISATION ON HELP-SEEKING BEHAVIOR IN PEOPLE LIVING WITH OBESITY

HANNE VANDEVELDE

Amount of words:

Promoter(s): Diederik De Cock, Lucas Schreurs
Psychology & Educational Sciences

Psychology & Educational Sciences **Academic year 2025/2026**

SUMMARY MASTER'S THESIS
(to include after the title-page)

Name and First Name: Vandevelde Hanne **Student ID:** 0599162

Title of the master's thesis: The influence of health literacy and self-stigmatisation on help-seeking behavior in people living with obesity

Promoter: Diederik De Cock, Lucas Schreurs

Summary: (300 words)

With rising global obesity prevalence, there is an urgent need to address the complex (socio-psychological) barriers to seek professional help for people living with obesity (PwO). Previous studies regarding the care for PwO revealed significant gaps in current research, as well as persisting obesity awareness gaps across healthcare professionals (HCPs). Stereotypes such as lack of willpower therefore contribute to insufficient care for PwO. The role and interplay of potential key factors in access to care (e.g. health literacy (HL) and stigmatization) also remain largely under-examined. Both the fragmentation in usage, as well as the shortage of valid and universally used measurement instruments challenge research. The aim of this study was to map the interaction between HL, self-stigma and patient delay (PD) in PwO. The Health Literacy Questionnaire, an adapted version of the Self-Stigmatisation of Seeking Help Scale and additional third survey mapped these constructs. Eligible participants (age≥18 y/o and BMI≥25 or a clinical history of obesity) were encouraged by HCPs (general practitioners, specialists, psychologists, etc.) to fill in three questionnaires on the online platform Qualtrics. To compensate for missing values, an imputation procedure was performed. Consequently, statistical analyses (ordinal logistic regression, multiple linear regression) were executed on both the original and imputed dataset. 118 participants met the predefined inclusion criteria (survey language: 89.8% Dutch, 5.9% French, 4.2% English). 58 ptcs had complete data across PD, BMI, HLQ scales, self-stigma, age and sex.
Analyses demonstrated that higher perceived social support and navigation skills significantly decreased PD, while higher information-seeking scores were associated with increased PD. Additionally, higher engagement with HCPs was associated with lower weight-related self-stigma. Discrepancies between the original and imputed datasets suggest that limited sample sizes and missing data initially obscured these relationships, pointing out the need for further research with larger samples.

Met opmerkingen [DD1]: Probeer dit ' ' te vermijden in wetenschappelijke literatuur. Je kan spreken over stereotypes such as lack of willpower?

Met opmerkingen [DD2]: Je mengt methods en results, maar ik hoop dat men er niet te zwaar aan tilt. Ik heb al de eerste method zin naar voren geschoven.

Met opmerkingen [HV3R2]: Aangepast!

Inhoud

Introduction **1**

Literature review **2**

Obesity and patient delay 2

Self-stigmatisation 3

Health literacy 4

Research aims, research questions and hypotheses **5**

Methods **5**

Questionnaire development 5

Survey administration 7

Software and statistics 7

Results **10**

Data screening and participants characteristics 10

Normality check and bivariate correlations 12

Ordinal Logistic Regression (imputed data) 13

Ordinal logistic regression (original data) 15

Multiple linear regression (imputed data) 18

Multiple linear regression (original data) 20

Discussion **23**

Strengths and limitations **24**

Conclusion and practical implications **26**

Ethical guidelines **27**

Acknowledgements **27**

References **28**

Appendix **37**

Appendix A: Participant Information Sheet 37

Appendix B: Cover Lettre E-mail 38

Appendix C: posters/flyers 40

Appendix D: Health Literacy Questionnaire (Dutch) 42

Appendix E: Adapted Self-Stigmatization Of Seeking Help Scale (SSS) 45

Appendix F: Questionnaire Patient Delay 46

Appendix G: Participating Healthcare Professionals 48

Appendix H: Item Intents Health Literacy Subscales 48

Appendix I: Spearman's rho correlations for the nine Health Literacy Questionnaire (HLQ) Subscales (non-imputed dataset) 52

Appendix J: Spearman's rho correlations for the nine Health Literacy Questionnaire (HLQ) Subscales (imputed dataset) 54

Introduction

According to the World Health Organisation (WHO), over 43% of adults (≥ 18 years) are overweight and 16% are living with obesity. In Belgium, data from Sciensano's Food Consumption Survey (2022–2023) reveals that 49% of the population has overweight, including 18% living with obesity (Bel et al., 2023). These rates are higher among elder people, residents of the Walloon Region and people with lower education levels ("Belgian Health Examination Survey 2018", 2022). If historical trends continue, Abdullahi et al. (2025) forecast that approximately 3.80 billion adults (95% UI 3.39–4.04) will be living with overweight or obesity by 2050. This global epidemic comes at a cost. Being overweight poses major immediate health risks and increases the likelihood of psychosocial and economic consequences (World Health Organization: WHO, 2024).

Attitudinal barriers such as stigmatization and societal framing of obesity as a lack of willpower, discourage patients living with obesity (PwO) more from seeking help than structural barriers. As a consequence, patient delay (PD) increases (Iswanto & Ayubi, 2023; Oleski et al., 2010; Schreurs, De Smedt, et al., 2025). Previous research demonstrates a mean delay of approximately 6 to 10 years from when PwO first started to experience weight concerns and the initial discussion with a healthcare professional (HCP) about this (Caterson et al., 2019; Rigas et al., 2020; Salle et al., 2024). According to Caterson et al. (2019), the mean delay in help-seeking is notably lower, at six years (Caterson et al., 2019; Schreurs, De Smedt, et al., 2025).

Additionally, previous research highlighted the importance of health literacy (HL) in healthcare. HL reflects one's ability to access, understand, appraise and use health information to make informed decisions about health and well-being. The WHO states that these competencies accumulate through daily activities, social interactions, etc. (World Health Organization: WHO, 2024). Building on this, patients suffering from morbid obesity with higher HL levels would be more inclined to agree to bariatric surgery (Cayci et al., 2017). This weight-loss surgery is a surgical procedure that alters the digestive system (*Weight-loss (Metabolic & Bariatric) Surgery - NIDDK*, z.d.). In addition to adverse health behaviors, lower levels of HL are also associated with greater health care utilisation (Chrissini & Panagiotakos, 2021). However, it remains unknown if patients with obesity (PwO) with higher HL levels seek help faster than PwO with lower HL levels. Furthermore, comparative analysis in this area is limited by the heterogeneity of HL measurements, resulting in gaps in current HL research (Michou et al., 2018).

To improve access to care for PwO, this study aimed to explore the influence of HL and attitudinal barriers such as self-stigmatisation on PD in PwO. To the best of our knowledge, this is

Met opmerkingen [DD4]: Zoals lucas zegt volgorde wat door mekaar schuiven:

Obesity big issue --> mental --> stigma --> delay? --> influence of HL? AIM

Met opmerkingen [LS5]: Dit mag weg van mij

Met opmerkingen [DD6]: We zijn met 8 miljard, dus das niet over de helft 😉

Met opmerkingen [DD7R6]: 8.3 zelfs!

Met opmerkingen [DD8]: Voor wat staat de u? Ik ken vooral CI

Met opmerkingen [HV9R8]: Uncertainty interval, blijkbaar vaak gebruikt voor bayesian statistics or complex modelling en is breder dan alleen CI

Met opmerkingen [LS10]: Ik zou na dit stukje het mss kort hebben over patient delay, dan HL en dan kan je zoals je doet eindigen met je aim waar ze dus alle drie in voorkomen 😉

Met opmerkingen [DD11R10]: agree

Met opmerkingen [DD12]: We weten nu dat in belgie dit minder, cfr lucas zijn studies. Incorporeren?

Met opmerkingen [DD13]: HL afgekort tot nu?

Met opmerkingen [DD14]: This comes out of the blue

the first study to examine the relationship between these factors. Additionally, this is one of the first studies that utilizes the Health Literacy Questionnaire (HLQ) (Osborne et al., 2013) to map the HL levels of PwO.

Literature review

Obesity and patient delay

Obesity is a chronic complex disease defined by excessive adiposity that can impair health (Bowman-Busato et al., 2024; Chong et al., 2023, p. 4). Overweight (BMI≥25kg/m^2) and obesity (BMI≥30kg/m^2) are associated with an increased risk of several noncommunicable diseases (NCDs) such as cancer, cardiovascular diseases (e.g. hypertension, myocardial infarction, stroke) and metabolic diseases (e.g. diabetes mellitus, fatty liver disease). These NCDs are the leading causes of mortality and long-term disability worldwide. Beyond physical risks, obesity is also linked with socio-economic and psychosocial consequences (e.g. school performance, quality of life). These latter consequences are aggravated by stigma, discrimination and bullying, as will be discussed in section 'Self-stigmatisation' (*About Obesity - The Belgian Association For The Study Of Obesity*, 2025; Flint et al., 2025; World Health Organization: WHO, 2024).

Furthermore, the Belgian Association for the study of Obesity (BASO) developed the BOSS (Belgian Obesity Staging System) classification (BASO, 2025). By reframing obesity as a chronic, heterogeneous condition defined by health impact rather than body mass index (BMI) alone, this classification model contributes to weight-related stigma reduction in Belgium. Consistent with this, it facilitates earlier and more appropriate help-seeking through personalized care and improvement of individuals' HL (BASO, 2025). This is important because PwO often perceive societal views attributing obesity to a lack of willpower as a barrier to seeking help (Schreurs et al., 2025). While most studies explored decisive elements such as demographic factors (age, sex) and comorbidity, Schreurs et al. (2025) emphasize the persistence of significant awareness gaps across healthcare professionals and general public regarding the causes and complications of obesity. Consistent with these findings, the Awareness, Care, and Treatment In Obesity maN-agement (ACTION) France study revealed an average duration of 10 years from the time they first became concerned about their weight (mean age = 48.4 years) to the point at which they engaged in weight management discussions with a healthcare professional (Salle et al., 2024). More than half of the participating HCPs considered insufficient understanding of obesity to be a significant barrier to seek help. However, only 24.2% of PwO shared this opinion. The main reason for PwO not discussing weight

- **Definition and cl**
  - BMI thresho
  - Distinction b
- **Multifactorial ae**
  - Biological, p
  - Move beyon
- **Chronic disease**
  - Obesity as a
  - Relevance fo
- **Belgian context**
  - Organisatior
  - Brief mentio

needed, but

Met opmerkingen [HV15]:

Met opmerkingen [LS16]: Klopt het dat je hier precies je voorgaande introductie herhaald. Ik zou nu denken dat je de verschillende themas (obesitas, patient delay, HL en stigma verder uitwerkt)

Met opmerkingen [DD17R16]: Idd, want dit heb je al eens gezegd. Je kan heel wat andere zaken ook schrijven over obesitas 😀

Met opmerkingen [HV18]: Nog differentiëren tussen verschillende dmv a, b en c!!

was the belief that it was solely their responsibility (28.5%) or because they feel uncomfortable discussing their weight with their HCP (25.2%) (Salle et al., 2024). Similar findings from the worldwide ACTION-10 study indicate that the lack of obesity awareness is a global issue (Caterson et al., 2019; Novo Nordisk, 2020).

For the sake of completeness, Dobson et al. (n.d.) highlighted inconsistencies in patient delay definitions and challenges in study comparisons. According to Hackett et al. (1973), PD is the duration between patients' initial symptom awareness and their first consultation with a physician. Given that early intervention could reduce obesity prevalence by 25 million between 2023 and 2060 and obesity related complications by 745 million, it is crucial to accelerate access to care for PwO (*About - MEPs for Action on Obesity*, 2025).

Self-stigmatisation

Acknowledging the potential of stigma and its negative association with well-being and coping is fundamental to understand the psychosocial challenges of PwO (Flint et al., 2017; Halding et al., 2010). Andersen et al. (n.d.) conceptualize stigma as labelling and negative stereotyping. This results in linguistic separation ('them' vs. 'us') and power asymmetry, as patients who live with obesity appear to have more unmet healthcare needs, breaches of dignity and an overall lack of respect and compassion by healthcare professionals (Alberga et al., 2019; Ananthakumar et al., 2019; Mold & Forbes, 2011).

In addition to this, previous researchers described a variety of misconceptions about the etiology and maintenance of obesity that contribute to stigmatization. These misconceptions often frame obesity as a result of laziness, personal responsibility or a lack of willpower (Puhl and Heuer, 2010; Schreurs, De Smedt, et al., 2025). Likewise, Puhl and Heuer (2009) state that weight bias results in inequities in employment settings, health-care facilities and educational institutions. Foster et al. (2003) studied more than 620 primary care physicians, finding that more than 50% perceived PwO as awkward, unattractive and noncompliant. Additionally, one-third of the physicians described these patients as weak-willed, careless and lazy. The HCPs tended to reduce the cause of obesity to behavioral factors (e.g. physical inactivity and excessive eating). Stigma thus operates at an individual (self-stigmatization), interpersonal (prejudice and discrimination from others) and structural (societal or institutional practices) level (Puhl and Heuer, 2010). These interrelated levels also have behavioral and health consequences (Raves et al., 2016; Vartanian & Shaprow, 2007). Vartanian and Shaprow (2007) state that heavier individuals reported more

Met opmerkingen [DD19]: Er zijn heel veel action studies, alleen deze die het bevestigt?

Met opmerkingen [HV20]:

Essential components:

- Definition
  - Patient delay a and seeking p
- Theoretical model
  - Help-seeking
- Types of barriers
  - Attitudinal (sh
  - Structural (cos
- Obesity-specific d
  - Normalisation
  - Belief that wei
- Role of stigma in c
  - Anticipated sti

Met opmerkingen [DD21]: What is stigma? Is it prevalent in obesity? What are it consequences?

Met opmerkingen [HV22]:

- Definition of wei
  - Public stigm
- Sources of stigm
  - Media, healt
- Consequences o
  - Psychologica
  - Behavioural
  - Physiologica
- Healthcare-speci
  - Negative pro
  - Impact on pa
- Belgian / Europe
  - Moral framir
  - How Western

Met opmerkingen [HV23]: Toevoegen en bekijken: https://onlinelibrary.wiley.com/doi/10.1038/oby.2003.142

Met opmerkingen [HV24]: Puhl, R. M., & Heuer, C. A. (2010). Obesity Stigma: Important considerations for public health. *American Journal of Public Health*, *100*(6), 1019–1028. https://doi.org/10.2105/ajph.2009.159491

Met opmerkingen [HV25]: https://www.obesityevidencehub.org.au/collections/impacts/weight-stigma-in-health-care#:~:text=Similar%20to%20the%20general%20public,5

Met opmerkingen [HV26R25]: HEEL BELANGRIJKE BRON!! NOG TOEVOEGEN

Met opmerkingen [HV27]: https://www.frontiersin.org/research-topics/3982/obesity-stigma-in-healthcare-impacts-on-policy-practice-and-

experiences with weight stigma than leaner individuals. Additionally, stigma experiences were positively correlated with exercise-avoidance motivation. Individuals who have more frequent experiences with weight stigma are therefore more inclined to avoid exercising (Vartanian & Shaprow, 2007). By ignoring weight stigma, HCPs thus overlook substantial suffering of many Belgian citizens and misses an opportunity to improve the care for PwO.

Consistent with these findings, BASO encourages greater focus on providing the public with accurate information on current insights into overweight and obesity. According to BASO experts, this approach may help reduce stigma and encourage earlier engagement with adequate care (OBESITY PLATFORM BELGIUM & BELGIAN ASSOCIATION FOR THE STUDY OF OBESITY, n.d.). Complementing these recommandations, empirical evidence indicates a larger impact of help-seeking self-stigma (i.e. internalisation of stigma) than help-seeking public stigma on help-seeking attitudes and intentions (Yu et al., 2022). However, existing meta-analyses do not differentiate between subpopulations, leaving the role of self-stigmatisation in PwO insufficiently understood (Yu et al., 2022).

Health literacy

Previous research points out the key role of health literacy (HL) in the etiology of obesity (Chrissini & Panagiotakos, 2021; Michou et al., 2018; Sørensen et al., 2015). According to the WHO, this relatively new concept means "being able to access, understand, appraise and use information and services in ways that promote and maintain good health and well-being." (World Health Organization, 2024). Low HL has been linked to worse health outcomes and reduced use of preventive healthcare services (Berkman et al., 2011; Cho et al., 2008; R. Parker et al., 1999; Sadeghi et al., 2013; Sansom-Daly et al., 2016; Tang et al., 2019). However, the various definitions and measurement instruments lead to the absence of a universal measurement standard and therefore substantial limitations in previous HL research (Chrissini & Panagiotakos, 2021; Friis et al., 2016; Griffin et al., 2010; Michou et al., 2018). In order to fill this gap in HL research, Osborne et al. (z.d.) created the Health Literacy Questionnaire (HLQ; see Appendix D). This globally used, person-centered, multidimensional tool has been linguistically and culturally adapted for various languages and settings. It provides data to profile individuals' experiences in accessing health information and services. Comprising nine domains, it highlights people's diverse strengths and needs (see section 4. Methods for the nine domains) (Osborne et al., z.d.). Verbatim item explanations from the *HLQ Item Intent Guide* (Osborne, 2019) are provided in the appendix.

Met opmerkingen [DD30]: Afkorting al gebruikt

Met opmerkingen [DD31]: Die zal blij zijn met het compliment!

Met opmerkingen [HV32]: VUB vraagt om alle relevante documenten mee te uploaden maar ik mag die gevalideerde schalen wss niet zomaar delen? Met VUB wel maar voor bv Leuven/istanbul eruit halen dan?

Met opmerkingen [DD33R32]: Je kan je thesis indienen als 'closed' zodat deze niet openbaar is. Bij een paper of abstract moet je deze niet includeren, gewoon refereren.

Met opmerkingen [HV34R32]: Ok!

Met opmerkingen [HV35]: Toevoegen nummer etc

Met opmerkingen [DD36]: Ik vraag me of je toch ergens niet in je methods deze subcategories beschrijft omdat je deze wel gebruikt in results en discussion.

In addition, a growing collection of internal validation evidence supports the implementation of the HLQ in various settings (Hawkins et al., 2017; Maindal et al., 2016; Osborne et al., 2013). Given the recentness of the HLQ, there is only limited research using this measurement tool. Another recurring limitation is the lack of data regarding HL of different populations (Cayci et al., 2017; Chrissini & Panagiotakos, 2021; Dülger & Ayaz-Alkaya, 2024; Faruqi et al., 2015; Lovrić et al., 2022; Michou et al., 2018). This knowledge is important to deploy awareness campaigns more efficiently and lower the barrier to care.

Met opmerkingen [HV37]: Moet dit dan eerder bij methods?

Met opmerkingen [DD38R37]: Nee want dit zijn redeneringen, niets methodologisch.

Research aims, research questions and hypotheses

This study sought to explore the interplay between health literacy (HL), weight-related self-stigma and patient delay (PD) among patients living with obesity (PwO). Specifically, this research focused on two research questions. First, the extent to which HL and self-stigmatization influence the duration of PD. Second, whether a significant association exists between HL and weight-related self-stigma among these patients.

Three hypotheses were formulated to address these questions. All nine HL subscales (SS) were first expected to be negatively correlated to PD in PwO. Consequently, patients with higher perceived HL were expected to seek help faster for their health- and weight-related complaints linked than PwO with lower HL. Second, self-stigma was suspected to be negatively correlated to PD in PwO. Thus, the higher a patient's self-stigma, the longer they were expected to wait to seek help for weight-related health complaints. As a final hypothesis, HL was predicted to be negatively correlated with self-stigma in PwO. Patients with higher HL were therefore expected to experience less self-stigma than patients with low HL.

Met opmerkingen [DD39]: Maar er zijn verschillende subdomeinen, bedoel je dan alle subdomeinen?

Met opmerkingen [HV40R39]: Ja op eerste zicht zou ik dacht gedacht hebben

Met opmerkingen [DD41R39]: ok

Methods

Met opmerkingen [HV42]:
Ik zou je methods onderverdelen in verschillende thema's namelijk:
Questionnaire development
Item generation and selection
Content validity by experts (kweet niet meer of we dit hebben gedaan)
Survey administration
Study design and participants
Survey modules
Statistical analyses

Questionnaire development

As mentioned above, the HL levels of PwO were measured by the HLQ designed by Osborne et al. (2013). This widely utilized measure of HL has been translated and validated in multiple European and Asian languages (Budhathoki et al., 2022; Lamot & Kirbiš, 2024; Osborne et al., 2013). All nine SSs cover various components of HL and across the scales, higher scores reflect greater HL. No items are reverse-scored. In the present study, all nine scales were conducted in order to obtain an accurate overview of the patients' HL. These SSs range from *Feeling understood and supported by healthcare providers* (SS1), *Having sufficient information to manage my health*

Met opmerkingen [HV43R42]: done

Met opmerkingen [DD44]: Als je de subschalen gebruikt, hier ook uitleggen wat ze zijn

Met opmerkingen [DD45R44]: Ook nog de scores etc uitleggen, iemand die de schalen niet kent, moet dit kunnen vanuit je tekst

Met opmerkingen [HV46R44]: Schalen vermelden indirecte scoring en omgekeerd

(SS2), *Actively managing my health* (SS3), *Social support for health* (SS4), *Appraisal of health information* (SS5), *Ability to actively engage with healthcare providers* (SS6), to *Navigating the healthcare system* (SS7), *Ability to find good health information* (SS8) and *Understanding health information well enough to know what to do* (SS9). Verbatim item explanations from the *HLQ Item Intent Guide* (Osborne, 2019) are provided in appendix H. The first part of the questionnaire (part one Q1-Q23; SSs one *Feeling understood and supported by healthcare providers* to five *Appraisal of health information*) measured responses through a 4-point Likert-type agreement scale ranging from *strongly disagree* to *strongly agree*. This scale captured both the direction and strength of each participants' position in relation to each item. Participants (ptcs) who choose *(strongly) disagree* or *(strongly) agree* were either opposing or approving of the statement. Given the forced-choice format and absence of a neutral midpoint, ptcs had to indicate the answer that most accurately represented their views (Osborne, 2019). Potential social desirability bias was thereby mitigated. Ptcs who score higher on SS one to five perceived themselves as having better HL in terms of personal knowledge, understanding and access to support from HCPs. In the second part of the HLQ (part two Q1-Q21; SS six *Ability to actively engage with healthcare providers* to nine *Understanding health information well enough to know what to do*), a five-point difficulty-based scale captured ptcs' perceptions of how challenging each item is for them. The scale ranged from *cannot do* or *always difficult* for patients who are unable to do the activity or they do it with extreme difficulty, to *always easy* when the respondent can do the task with full confidence and great fluency, all the time (Osborne, 2019). In conclusion, higher scores on the HLQ generally suggest greater perceived HL, either in terms of knowledge and support (SS one to five) or skills and engagement (SS six to nine) (Osborne, 2019).

In addition to HL, patient delay (PD) is defined as the time duration between the onset of the first health symptoms and the first point of contact with the health care provider. Using a questionnaire, patients charted the onset of their symptoms and their initial contacts with their various health practitioners (dates). This part of the study was based on a validated questionnaire, constructed by various HCPs specialized in obesity care (Wanes & De Cock, 2025).

As a final, an adapted Self-Stigma Associated with Seeking Psychological Help scale (SSOSH) (Vogel et al., 2006) was used to measure ptcs' degree of self-stigmatization regarding seeking help. The Self-Stigmatization of Seeking Help Scale (SSS) focused on PwO and weight-related issues instead of mental health problems and psychological support (SSOSH). Patients were invited to rate the degree to which each item described how they might react in these situations

Met opmerkingen [DD47]: Ik zou ze gewoon allemaal geven.

Met opmerkingen [HV48]: Overbodig?

Met opmerkingen [DD49R48]: Nee dit is wel mooie info.

Met opmerkingen [HV50]: chatgpt

Met opmerkingen [HV51]: Overbodige herhaling?

Met opmerkingen [DD52R51]: Miss wel handig, want heel veeel indepth info over de HL.

Met opmerkingen [HV53]: Hoe verwijs ik best naar jullie hiervoor @lucas? Gaat over de vragenlijst v Vicken

Met opmerkingen [HV54R53]: Ik vermoed naar Vickens masterthesis verwijzen maar heb geen voorbeeld daarvan

Met opmerkingen [DD55R53]: Yes verwijzen naar Viken zijn thesis OF abstract Lucas ECO binnenkort?

Met opmerkingen [HV56R53]: Patient delay in obesity management: exploring help-seeking behavior among adults with obesity in Belgium Wanes, V. ((PhD) Student), De Cock, D. (Promotor). 2025

Met opmerkingen [DD57]: Heeft dit subschalen of niet? Indien ja --> uitleggen, anders de totaal score uitleggen, op hoeveel etc

Met opmerkingen [HV58R57]: Geen subschalen

Met opmerkingen [DD59R57]: Excellent.

through a five-point scale, ranging from *strongly agree* to *strongly disagree*. Items two, four, five, seven and nine were scored inversely. Consequently, higher total scores on the SSS reflect higher levels of perceived self-stigmatization with total scores ranging from minimum 10 up to a maximum of 50. To the best of our knowledge, the SSOSH is the only validated scale that captures self-stigma regarding seeking help. Given the limited studies regarding self-stigma and help-seeking for weight-related health issues in PwO, validated scales regarding weight-related issues were not available.

Survey administration

During the preliminary phase of this study between May and August 2025, various HCPs across Flanders and Brussels were encouraged to participate in the recruitment initiative and study dissemination. These professionals were contacted through emails, phone calls and in-person visits. During on-site visits, flyers containing QR codes were distributed to allow ptcs easy access to the online questionnaires (see appendix C).

Following this initial phase, HCPs in eight hospitals, one general practitioner (GP) and seven pharmacies across Flanders recruited patients between the 1st of August and the 25th of December 2025. The complete list of participating HCPs including primary, secondary and tertiary care institutions, is provided in the appendix G. Patients who met the inclusion criteria (age ≥ 18 years, BMI ≥ 25 or a clinical history of obesity) were invited by their HCP to scan a QR code and complete the three questionnaires, which took approximately 15 minutes to finish. Given Belgium's multilingualism, the questionnaires were administered in Dutch, French and English. The call for participation was done face-to-face, through phone or email. E-mail contact between HCPs and ptcs was conducted using a predefined information letter describing the purpose and procedure of the study (see appendix B). Other HCPs placed flyers containing QR codes in the waiting room to facilitate patient access (see appendix C). The appendix contains all relevant documents referenced in this section. Ptcs could complete the questionnaires at any time, on condition that they had access to a mobile phone or other digital device with internet access.

Software and statistics

Data was collected on the software platform Qualtrics (Qualtrics, 2024). Subsequently, IBM SPSS Statistics for Windows (version 31; IBM Corp., 2023) was used for the analysis of collected data.

Data were screened to both identify missing information regarding HL, stigma, PD and to ensure the adequacy of the planned analyses.

Met opmerkingen [DD60]: Between HCP and participant?

Met opmerkingen [HV61]: Nog toevoegen

Met opmerkingen [DD62]: Ook te vermelden bij limitaties nee? Zeker als je nadenkt over HL?

Met opmerkingen [DD63]: Level of significane was put at 0.05

Met opmerkingen [HV64]: Power-analyse uitvoeren en toevoegen

Met opmerkingen [DD65R64]: indeed

Met opmerkingen [DD66R64]: Hadden we die niet al gedaan voor EC?

Met opmerkingen [HV67R64]: Nee toen een gok gedaan adhv chatgpt en online bronnen

Met opmerkingen [DD68]: Hier dus je methoden (t test chi square regressies etc in detail beschrijven.

Descriptive statistics were performed as Mean ± SD for the continuous variables (age, BMI) for the retained sample, using listwise deletion of missing values. Unlike the continuous HLQ and SS scores, PD was coded as an ordinal variable and coded into five duration-based categories: (1) ≤ 1 month, (2) > 1 to ≤ 3 months, (3) > 3 to ≤ 6 months, (4) > 6 to < 12 months, (5) ≥ 12 months. Educational level was categorized as a five-level ordinal variable: (1) Secondary education (2) Higher education (3) Academic Bachelor's (4) Academic Master's (5) Other. Therefore, the median (Mdn) and interquartile range (IQR) were used for descriptive purposes. Third, frequencies, percentages and mode were examined for nominal variables (Sex, marital status and preferred language). Sex had four categories: (1) male, (2) Female, (3) X, (4) prefer not to say. Marital status contained seven levels: (1) married, (2) not married, (3) cohabiting, (4) single, (5) divorced, (6) widow/widower, (7) other. Preferred language consisted of six levels: (1) Dutch, (2) French, (3) English, (4) German, (5) Arab, (6) Other.

Prior to the primary analyses, the distribution of all variables was evaluated using Kolmogorov-Smirnov tests and visual inspection of the Q-Q plots. Assumptions regarding linearity, normality and outliers were checked (Judy, 2021). Subsequently, Pearson zero-order correlation analyses were performed to identify interrelationships between the continuous variables: individual HL SSs and stigma. Zero-order correlations represent direct associations between two variables without controlling for potential confounding factors. Given the ordinal nature of PD, Spearman's rank-order zero-order correlation analyses were used to examine the initial relationships between PD and the nine HLQ SSs, alongside PD and self-stigmatization. Statistical significance was set at α = .05 for both zero-order correlation analyses. Missing data were omitted in the correlation analyses. The magnitude of the correlation coefficients (*r*) was interpreted using Cohen's guidelines (2013), where .10, .30, and .50 represent small, medium, and large effects, respectively.

Although linear regression (LR) was initially considered, an ordinal logistic regression (OLR) using a cumulative logit link function was conducted to study the influence of self-stigma and the nine HLQ SSs on PD (ordinal). In contrast to the LR, an OLR respects the ranked structure of the data without making the assumption of equal intervals between categories. To address the issue of missing data within the original dataset (ODS), a sensitivity analysis was performed by comparing the OLR results from the original data with those from the imputed dataset. After verifying the original dataset for eligibility, missing values for PD, the nine HLQ SSs, self-stigma and sex were replaced by estimating the most likely parameters based on the observed data distribution (Expectation-Maximization (EM) algorithm). Furthermore, prior to the primary analysis, the

Met opmerkingen [HV69]: Toevoegen: normality checked: pearson voor de relatie tss zelfstigma en de HLQ want allemaal normaalverdeeld, spearman voor relatie tss HLQ en PD, zelfstigma en PD want ordinale variabele

Met opmerkingen [DD70]: Why would you do this??

Met opmerkingen [HV71R70]: PD was als open string-variable ingevoerd dus ze moesten gokken… er waren antwoorden die heel uiteenlopend waren: 'dagen', 'enkele jaren', '3 maand', 'heel mijn leven' waardoor die variabele moeilijk was om in te voeren in analyses… dus daarom onderverdeeld omdat ik daar wel mee kon werken

Met opmerkingen [DD72R70]: Ah merde, volgende keer moeten we dat in cijfers krijgen ☹

Met opmerkingen [HV73]: Wijzigen indien we beslissen om dit anders te doen

Met opmerkingen [HV74]: 1.Dat beide variabelen continu zijn;
2.Dat er een lineair verband bestaat tussen de variabelen;
3.Dat de variabelen normaal verdeeld zijn;
4.En dat de variabelen geen outliers hebben.
Assumpties pearson: checken en vermelden

Met opmerkingen [HV75R74]: Judy. (2021, June 10). *Correlaties*. Data-affinity. https://data-affinity.nl/statistiek/sterkte-van-een-verband-bepalen.html

Met opmerkingen [HV76]: Overbodig?

Met opmerkingen [DD77R76]: Nee methods

Met opmerkingen [DD78]: = methods

Met opmerkingen [DD79]: = methods

Met opmerkingen [DD80]: = methods, en natuurlijk logistic, maar dat komt omdat je delay hebt gecategoriseerd. Verlies je info mee!

Met opmerkingen [HV81R80]: Zie uitleg over PD ordinale variabele!

Met opmerkingen [DD82R80]: I see ☹

aforementioned assumptions for OLR (model fit, goodness-of-fit and the proportional odds assumption) were evaluated.

To isolate the effects of HL and stigma (nine HLQ scales, SSS) before adjusting for potential confounding factors (sex, age, BMI, marital status, education level, preferred language), the OLR analysis was conducted in two stages, using the not imputed (original) dataset. In the first stage, an OLR was performed using only the HL scales (SS1–SS9) and self-stigma as independent variables. This established the baseline relationship between HL, stigma and the dependent variable (PD). In the second stage, the model was expanded to account for marital status, age, sex, preferred language (French, Dutch, English), education level and BMI. The inclusion of these covariates resulted in the final model presented in Table 4. Before conducting each OLR, the proportional odds assumption was assessed using the Test of Parallel Lines. Model fit was evaluated using the Likelihood Ratio Chi-Square test while chi-square goodness-of-fit statistics (Pearson and Deviance) were used to check the adequacy of cell frequencies and potential sparsity. Nagelkerke's pseudo R^2 was used to estimate the proportion of variance explained. Multicollinearity among predictors was evaluated using Variance Inflation Factors (VIFs).

To explore the influence of the different HL SSs on the outcomes of the stigma-questionnaire (SSS), a multiple linear regression (MLR) was conducted on the imputed dataset, using the Enter method. All nine HLQ SSs were entered as the primary independent variables. The stigma-questionnaire was entered as the dependent variable.

To further assess the internal dynamics of the nine HLQ SSs and self-stigmatization, a two-stage hierarchical multiple linear regression (MLR) was conducted on the original dataset. Both MLRs used the Enter method. These analyses aimed to determine which HL-related skills significantly predict the self-stigmatization among PwO. Furthermore, the influence of demographic covariates (age, sex, marital status, education level, BMI and preferred language) was determined. In the first stage, all nine HLQ SSs were entered as the primary independent variables. Stigma was the dependent variable. In the second stage, aforementioned potential confounders were added to the model as independent variables to control for their influence. Several key assumptions were evaluated prior to the MLRs. First, linearity was checked through visual inspection of scatterplots, while the independence of residuals was verified using the Durbin-Watson statistic. Standard psychometric conventions indicate values between 1.5 and 2.5 as non-autocorrelated residuals. Furthermore, the normality of residuals was assessed using a normal P-P plot and histograms. In addition, homoscedasticity was evaluated by plotting standardized residuals against standardized

Met opmerkingen [DD83]: Dit is te veel chatgpt achtig, dit hoort niet in methods section, daar moeten delen van in results (het getal 58 bv) en rest in strengths en limitations

Met opmerkingen [HV84]: Nog uitvoeren

predicted values. As a final, multicollinearity among the predictors (stigma, nine HL SSs) was examined by Variance Inflation Factors (VIF) to ensure the stability of the model. Values above 4 indicate potential issues.

Results

Data screening and participants characteristics

A total of 154 individuals initiated the online survey (Dutch *N* = 135, English *N* = 9, French *N* = 10). Only pcts who met the predefined inclusion criteria (age≥18 y/o and BMI≥25 or a clinical history of obesity) were included (*N* = 118) (Table 1). Additionally, analysis of the missing information indicated no systematic bias between ptcs with complete data and those with missing data (PD, BMI, age, sex, HLQ SSs, self-stigma). Only 58 ptcs completed all three questionnaires and had no missing data concerning PD, BMI, sex, the nine HL SSs and age. 37.9% of these ptcs self-identified as male (*N* = 22), while 62.1% self-identified as female (*N* = 36).

However, given the focus on complex interactions among the nine HL SSs, stigma and PD, a pairwise deletion approach was adopted in further zero-order correlation analyses. This allowed the inclusion of ptcs with partial data, maximizing the available sample size for each specific correlation and regression analysis. Thereby, cases with incomplete data were retained to ensure that all available information was utilized in the analysis.

Of the initial 154 ptcs, 82 valid ptcs met the inclusion criteria and had no missing data in regards to PD, BMI, age and sex. 89.8% of the valid responses were administered in Dutch, 5.9% in French and 4.2% in English. Complete data for the primary variables PD, HLQ scales and self-stigma were available for 64 ptcs, while a subset of 58 ptcs had complete data across PD, BMI, HLQ scales, self-stigma, age and sex. Those latter cases were used for further analyses.

The final sample (*N* = 58) was predominantly female (*n* = 36, 62%) with a mean age of 47.6 years (*SD* = 14.1) and a mean BMI of 35.2 (*SD* = 6.0). On average, female ptcs were 45.3 years old (*SD* = 13.9) with a mean BMI of 35.3. In comparison, male ptcs (*n* = 22, 38%) were on average 52.8 years old (*SD* = 13.4) with a mean BMI of 35. The median PD in both groups was one year or longer with an IQR of more than one month PD to 12 months PD or longer. Although sex was included as a nominal variable consisting of four categories (Male, Female, X and 'prefer not to say'), every ptc in the final sample identified as either male or female.

Table 1

Met opmerkingen [HV85]: Dit zijn de aantallen die Qualtrics mij gaf zonder datacleaning etc.

Met opmerkingen [HV86]: Toevoegen taal

Met opmerkingen [HV87]: 6.022

Met opmerkingen [DD88R87]: 6.0 schrijven, alles 1 getal na komma maken = uniformisatie

Met opmerkingen [HV89]: 35.0063

Met opmerkingen [HV90]: Decimaal ook vermelden?

Met opmerkingen [DD91]: Maar je hebt dit ordinaal gemaakt? Waarom dan mean/median?

Met opmerkingen [DD92R91]: Tbd!!!

Met opmerkingen [HV93R91]: Omdat wij dat altijd moesten geven bij statistiek als een variabele ordinaal was woopsie… Daarom in het rood gezet: is het verplicht om dat te vermelden? Want hier op zich niet zo heel nuttige info maar soms zijn bepaalde statistische cijfers verplicht? (bv gemiddelde als de variabele continu is)

Met opmerkingen [HV94R91]: (staat ook in uitleg bij methods nu)

Met opmerkingen [DD95R91]: Ik snap niet waarom je een ordinale (eg categorisch) variabele moet weergeven met median?

Met opmerkingen [HV96R91]: Ja kwn dat was een regel destijds maar kan ook gemiddelde geven als je wil?

Met opmerkingen [HV97]: PD nog niet uitgelegd hier. Eerst nog uitleggen

Met opmerkingen [HV98R97]: ordinaliteit

Descriptive statistics of the participants who met the predefined inclusion criteria (age≥18 y/o and BMI≥25 or a clinical history of obesity) (N = 118).

	Patients with obesity
Number	118
Sex, n (%)	
Female	82 (69.5%)
Male	36 (30.5)
Age (years), Mean (SD)	47.6 (14.1)
BMI (kg/m²), Mean (SD)	35.2 (6.0)
Attempts of weight loss, n (%)	
Zero attempts	11 (9.3%)
One attempt	5 (4.2%)
≥One attempts	79 (66.9%)
Missing	23 (19.5%)
Patient delay (months), n (%)	
≤1m	12 (10.2%)
1m < x ≤ 3m	12 (10.2%)
3m < x ≤ 6m	8 (6.8%)
6m < x < 12m	5 (4.2%)
≥ 12m	52 (44.1%)
Missing	29 (24.6%)
Marital status, n (%)	
Married	55 (46.6%)
Not married	6 (5.1%)
Cohabiting	18 (15.3%)
Single	19 (16.1%)
Divorced	6 (5.1%)
Widow/widower	2 (1.7%)
Other	1 (0.8%)
Missing	11 (9.3%)
Educational level, n (%)	

Met opmerkingen [DD99]: Dit is perfect.

Secondary education	45 (38.1%)
Higher education	40 (33.9%)
Academic Bachelor	5 (4.2%)
Academic Master	5 (4.2%)
Other	11 (9.3%)
Missing	12 (10.2%)
What language(s) do you feel most comfortable expressing yourself in?, n (%)	
Dutch	92 (78.0%)
French	1 (0.8%)
English	6 (5.1%)
German	1 (0.8%)
Other	6 (5.1%)
Missing	12 (10.2%)
Survey language, n (%)	
Dutch	106 (89.8%)
French	7 (5.9%)
English	5 (4.2%)
Moderate to vigorous physical activity per week (min. 30mins), n (%)	
≥ 5 days	17 (14.4%)
1 – 4 days	51 (43.2%)
< 1 day	33 (28.0%)
Missing	17 (14.4%)

Note. BMI = body mass index; *M* = mean; *n* = number of valid participants (listwise); PD = patient delay.

Met opmerkingen [HV100]: Of gewoon 'valid participants'?

Normality check and bivariate correlations

For both the original (not imputed) dataset (ODS) and the imputed dataset (IDS), Kolmogorov-Smirnov tests and visual inspection of the Q-Q plots showed normal distributions of the results of the nine HLQ SSs as well as the SSS total scores. Subsequently, Pearson zero-order correlation analyses showed moderate to strong positive intercorrelations between the nine HL SSs in the

original and imputed dataset. An increase in one HL subscale thus implies an increase in other SSs. SS eight (*Ability to find good health information*) and SS nine (*Understanding health information well enough to know what to do*) were most strongly associated (ODS: r = .810 , p < .001; IDS: r = .810, p < .001). Conversely, the SSS was significantly and negatively correlated with HL SS six (*Ability to actively engage with healthcare providers*) (ODS: r = -.380 , p < .001; IDS: r = -.345, p < .001), SS four (*Social support for health*) (ODS: r = -.280 , p = .016; IDS: r = -.261, p < 0.001), SS one (*Feeling understood and supported by healthcare providers*) (ODS: r = -.261 , p = 0.024; IDS: r = -.248, p < 0.001), SS two (*Having sufficient information to manage my health*) (ODS: r = -.237 , p = 0.039; IDS: r = -.220, p < 0.001), SS seven (*Navigating the healthcare system*) (ODS: r = -.233 , p = .043; IDS: r = -.216, p < 0.001) were negatively associated with the SSS.

Spearman's rank-order zero-order correlation analyses in the original dataset revealed a significant negative correlation between PD and HL SS three (*Actively managing my health*) (r_s = -.30, p = .012). In the imputed dataset, a negative association was identified between PD and HL SS three (*Actively managing my health)* (r = -.261, p < .001), SS one (*Feeling understood and supported by healthcare providers*) (r = -.121, p < .001) and SS six (*Ability to actively engage with healthcare providers*) (r = -.110, p < .001). Furthermore, a small yet significant positive correlation was found between self-stigma and PD (r = .087, p < .001).

Ordinal Logistic Regression (imputed data)

An OLR was performed on the imputed dataset (N = 118) to investigate the impact of HL and self-stigma on patient delay (PD). The final model demonstrated a significantly better fit than the intercept-only model ($\chi^2(10) = 19.255$, p = .037). Goodness-of-fit tests further supported the model, with both Pearson ($\chi^2(342) = 366.002$, p = .178) and Deviance ($\chi^2(342) = 200.152$, p = 1.000) tests yielding non-significant results. This indicates an acceptable fit to the data. The model explained between 19.5% (Cox and Snell pseudo R^2) and 21.3% (Nagelkerke pseudo R^2) of the variance in PD. However, the assumption of proportional odds may have been violated (test of parallel lines: $\chi^2(30) = 52.766$, p = .006). Analysis of the parameter estimates revealed that three specific domains of HL were significant predictors of PD. First, higher scores on SS three *Social support for health* were associated with a significant decrease in the odds of higher PD (B = -0.372, p = .011). Second, higher scores on SS seven *Navigating the healthcare system* significantly reduced the likelihood of experiencing longer delays (B = -0.276, p = .024).

Conversely, higher scores on SS eight *Ability to find good health information* were associated with an *increase* in the odds of higher PD (B = 0.402, *p* = .015). Weight-related self-stigma (B = 0.008, *p* = .848) and the remaining HLQ SSs did not emerge as significant predictors within this model (see Table 2).

Table 2

Results of the Ordinal Logistic Regression Analysis for Patient Delay on the imputed dataset (N = 118).

SS	*B*	SE	Wald statistic	*p*-values	95% CI
1. Feeling understood and supported by healthcare providers	-0.089	0.168	0.277	.599	[-0.418, 0.241]
2. Having sufficient in-formation to manage my health	-0.073	0.206	0.126	.722	[-0.476, 0.330]
3. Actively managing my health	**-0.390**	**0.160**	**5.918**	**.015**	**[-0.705, -0.076]**
4. Social support for health	0.143	0.122	1.366	.243	[-0.097, 0.383]
5. Appraisal of health information	0.120	0.148	0.653	.419	[-0.171, 0.410]
6. Ability to actively engage with healthcare professionals	-0.079	0.133	0.355	.551	[-0.339, 0.181]
7. Navigating the healthcare system	**-0.264**	**0.122**	**4.683**	**.030**	**[-0.504, -0.025]**
8. Ability to find good health information	**0.334**	**0.164**	**4.147**	**.042**	**[0.013, 0.655]**

Met opmerkingen [HV101]: p-values mogen normaal nooit met 0 voor. Toch doen om alles gelijk te maken in de tabel? Of zo laten?

9. Understanding health information well enough to know what to do	0.001	0.161	0.000	.997	[-0.315, 0.316]
Self-Stigmatization of Seeking Help Scale	0.002	0.044	0.003	.959	[-0.083, 0.088]

Note. B = unstandardized regression coefficient; CI = confidence intervals; *p*-value = probability value; SE = standard error of the regression coefficient; SS = Subscale; Wald statistic = Wald chi-square.

Ordinal logistic regression (original data)

In the first stage, the nine HLQ SSs and stigma (SSS) results were included as independent variables in the OLR. Out of a total sample of 118 participants, 64 cases were classified as valid responses. 54 cases were missing. Although the Test of Parallel Lines was significant (χ^2 (30) = 132.82, p < .001)) and the assumption of parallel lines was therefore violated, the OLR was maintained to respect the ranked nature of the dependent variable (PD). Furthermore, convergence issues were identified and suggest that the model stability should be interpreted cautiously. The non-significant Pearson ($\chi^2(242)$ = 270.83, p = .098) and Deviance ($\chi^2(242)$ = 145.94, p = 1.00) goodness-of-fit tests demonstrated adequate structural fit of the OLR. However, the overall model did not significantly improve the prediction of PD over the intercept-only model ($\chi^2(10)$ = 15.20, p = .125). This suggests that while the model fit adequately, the collective predictive power of the combined independent variables (HLQ SSs and SSS) for PD were limited in this sample. The Nagelkerke pseudo R^2 indicated that the model accounted for 23.0% of the variance in PD. Despite the overall model significance level, individual parameter estimates were studied for exploratory purposes. SS three *Actively managing my health* (B = -0.390, p = .015 see Table 2) and SS seven *Navigating the healthcare system* (B = -0.264, p = .030; see Table 2) presumably act as negative predictors of PD. Conversely, HLQ SS eight *Ability to find good health information* appears to be a positive predictor of PD (B = 0.334, p = .042; see Table 3).

Table 3

Results of the first Ordinal Logistic Regression Analysis for Patient Delay on the original dataset (N = 64).

Met opmerkingen [HV102]: Test of parallel lines toevoegen!! Nog uitvoeren en toevoegen

Met opmerkingen [DD103]: Heb je demographics aan toegevoegd?

Met opmerkingen [HV104R103]: Nee nog niet

Met opmerkingen [DD105]: Das eigenlijk niet slecht voor HL

Met opmerkingen [HV106]: Counterintuitive!! Vermelden in discussie!!

Met opmerkingen [HV107]: Ik twijfel over de getallen hier: waar moet ik een nul voorzetten en waar niet? Online geen eenduidig antwoord te vinden over APA7… normaal getallen die 1 kunnen overschrijden wel een 0 voor de . Maar bij sommige voorbeelden staat er dan toch geen 0?

Met opmerkingen [DD108R107]: Overal een 0 voorzetten gewoon

Met opmerkingen [HV109R107]: P wss zonder 0 houden? Want kan nooit groter worden dan 1?

SS	*B*	SE	Wald statistic	*p*-values	95% CI
1. Feeling understood and supported by healthcare providers	-0.089	0.168	0.277	.599	[-0.418, 0.241]
2. Having sufficient in-formation to manage my health	-0.073	0.206	0.126	.722	[-0.705,-0.076]
3. Actively managing my health	**-0.390**	**0.160**	**5.918**	**.015**	**[-0.705, -0.076]**
4. Social support for health	0.143	0.122	1.366	.243	[-0.097, 0.383]
5. Appraisal of health information	0.120	0.148	0.653	.419	[-0.171, 0.410]
6. Ability to actively engage with healthcare professionals	-0.079	0.133	0.355	.551	[-0.339, 0.181]
7. Navigating the healthcare system	**-0.264**	**0.122**	**4.683**	**.030**	**[-0.504, -0.025]**
8. Ability to find good health information	**0.334**	**0.164**	**4.147**	**.042**	**[0.013, 0.655]**
9. Understanding health information well enough to know what to do	0.001	0.161	0.000	.997	[-0.315, 0.316]
Self-stigmatization	0.002	0.044	0.003	.959	[-0.083, 0.088]

Note. B = unstandardized regression coefficient; CI = confidence intervals; *p*-value = probability value; SE = standard error of the regression coefficient; SS = Subscale; Wald statistic = Wald chi-square.

In the second OLR, two specific dimensions of HL emerged as significant predictors of PD. Before interpreting the individual predictors (sex, age, BMI, marital status, education level and preferred language), the underlying assumptions of the model were evaluated. Complete data were available for 55 out of 118 respondents. 63 cases contained missing values. The Model Fitting Information indicated that the final model represented a significant improvement over the intercept-only null model ($\chi^2(16) = 30.069$, $p = .018$). This final model contained the full set of predictors.

Furthermore, the Goodness-of-Fit tests yielded non-significant results for both the Pearson (p = .222) and Deviance (p = 1.000) statistics. Therefore, the model fits the observed data adequately. The Test of Parallel Lines results were non-significant ($\chi^2(48) = 32.222$, p = .961), suggesting the slope coefficients are consistent across the response categories and the proportional odds assumption was met. Nagelkerke pseudo R^2 value was .462. The model thus accounts for approximately 46.2% of the variance in the dependent's variable ranking. Upon the independent variables, HLQ SS seven (*Navigating the healthcare system*) demonstrated a significant negative association with PD (B = -0.332, SE = .155, p = .033), suggesting that higher scores in this domain are associated with lower odds of being in a higher category of PD. Conversely, HLQ SS eight (*Ability to find good health information*) positively associated with PD (B = 0.445, SE = .198, p = .024). This indicates that increasing scores on SS eight are associated with higher scores on PD categories. Other predictors in this model, including demographic factors like age (p = .525), sex (p = .185) and BMI (p = .098), as well as the SSS (p = .766), did not reach statistical significance at the α = .05 level.

Table 4

Results of the second Ordinal Logistic Regression Analysis for Patient Delay on the original dataset, controlling for potential confounders (marital status, age, sex, preferred language, education level) (N = 55).

SS	***B***	**SE**	**Wald statistic**	***p*-values**	**95% CI**
1. Feeling understood and supported by healthcare providers	*-0.213*	0.217	0.964	*.326*	[-0.640, 0.213]
2. Having sufficient in-formation to manage my health	*-0.203*	0.297	0.466	*.495*	[-0.784, 0.379]
3. Actively managing my health	*-0.416*	0.226	3.388	*.066*	[-0.858, 0.027]
4. Social support for health	*0.183*	0.147	1.555	*.212*	[-0.105, 0.470]
5. Appraisal of health information	*0.199*	0.191	1.086	*.297*	[-0.175, 0.574]

6. Ability to actively engage with healthcare professionals	*-0.301*	0.181	2.774	*.096*	[-0.656, 0.053]
7. Navigating the healthcare system	**-0.332**	**0.155**	**4.562**	**.033**	**[-0.636, -0.027]**
8. Ability to find good health information	**0.445**	**0.198**	**5.072**	**.024**	**[0.058, 0.833]**
9. Understanding health information well enough to know what to do	0.049	0.207	0.057	.812	[-0.356, 0.454]
Self-Stigmatization of Seeking Help Scale	-0.016	0.055	0.088	.766	[-0.125, 0.092]
Sex	-1.051	0.793	1.755	.185	[-2.605, 0.504]
Age (years)	-0.018	0.028	0.403	.525	[-0.073, 0.037]
BMI (kg/m²)	-0.115	0.069	2.740	.098	[-0.250, 0.021]
Marital status	-0.335	0.239	1.967	.161	[-0.802, 0.133]
Educational level	0.153	0.344	0.199	.656	[-0.521, 0.827]
Preferred language	0.567	0.429	1.745	.187	[-0.274, 1.409]

Note. B = unstandardized regression coefficient; BMI = Body Mass Index; CI = confidence intervals; *p*-value = probability value; SE = standard error of the regression coefficient; SS = Subscale; Wald statistic = Wald chi-square. Sex, marital status and preferred language were coded as nominal variables. Sex: (1) male, (2) female, (3) X, (4) prefer not to say. Marital status: (1) married, (2) not married, (3) cohabiting, (4) single, (5) divorced, (6) widow/widower, (7) other. Preferred language: (1) Dutch, (2) French, (3) English, (4) German, (5) Arab, (6) Other. Educational level was classified as ordinal variable: (1) secondary education (2) Higher education (3) Academic Bachelor's (4) Academic Master's (5) Other.

Multiple linear regression (imputed data)

A MLR was conducted to explore the influence of HL on the self-stigma outcomes. The overall model was significant, explaining 17.9% of the variance ($F(9, 108) = 2.620$, $p = .009$) in self-stigma scores. Notably, HLQ SS six (*Ability to actively engage with healthcare providers*) was the only significant unique predictor ($B = -0.618$, $p = .042$), suggesting that higher engagement with HCPs is associated with reduced weight-related self-stigmatization. The Durbin-Watson score of

Met opmerkingen [DD110]: Is wel echt belangrijke uitkomst!!

2.188 and VIF values were below 4, confirm that this model meets the necessary assumptions for independence and multi-collinearity (see Table 5).

Table 5

Results of the multiple linear regression with self-stigmatization as dependent variable and the nine HL subscales as independent variables (imputed dataset).

SS	**Unstandardized *B***	**Stand. Coefficients *β***	***t***	***p*-value**	**95% CI**	***VIF***
1. *Feeling understood and supported by healthcare providers*	-0.124	0.353	-0.353	0.725	[-0.824, 0.575]	1.812
2. *Having sufficient information to manage my health*	-0.345	0.437	-0.790	0.432	[-1.212, 0.521]	1.808
3. *Actively managing my health*	-0.392	0.296	-1.326	0.188	[-0.979, 0.194]	1.116
4. *Social support for health*	-0.260	0.269	-0.966	0.336	[-0.794, 0.274]	1.658
5. *Appraisal of health information*	0.158	0.311	0.507	0.613	[-0.459, 0.775]	1.699
6. *Ability to actively engage with healthcare providers*	**-0.618**	**0.301**	**-2.057**	**0.042**	**[-1.214, -0.022]**	**2.979**
7. *Navigating the healthcare system*	0.089	0.254	0.350	0.727	[-0.415, 0.594]	2.722
8. *Ability to find good health information*	0.003	0.357	0.008	0.993	[-0.705, 0.711]	3.697
9. *Understanding health information well enough to know what to do*	0.064	0.348	0.184	0.854	[-0.626, 0.754]	3.323

Note. *B* = unstandardized regression coefficient; *β* = standardized regression coefficient; CI = confidence interval; *p*-value = probability value; SS = subscale; *t* = *t* statistic; VIF = variance inflation factor.

Multiple linear regression (original data)

In contrast to the aforementioned significant outcomes in the imputed dataset and the initially suggested negative associations in the Pearson correlation (original dataset), the MLR model in both stages did not significantly predict self-stigmatization in the original dataset. In model 1, which included only the HLQ SSs and SSS, the model was non-significant ($F(9,62) = 1.629$, $p = .127$, $R^2 = .191$, adjusted $R^2 = .074$). Following the inclusion of demographic confounders in Model 2, the model remained non-significant ($F(14,54) = 1.296$, $p = .240$, $R^2 = .191$, adjusted $R^2 = .057$). As shown in Table 6 and 7, none of the nine HLQ SSs were unique significant predictors of self-stigmatization ($p > .05$ for all scales). Collinearity diagnostics confirmed that the model was stable with all Variance Inflation Factor (*VIF*) values remaining below the threshold of 4. This suggests that the regression estimates were stable and not substantially affected by collinearity. The independence of residuals was confirmed by a Durbin-Watson statistic of 1.95 in the first model and 1.83 in the second model. This is situated within the recommended range of 1.5 to 2.5.

Table 6

Results of the multiple linear regression with self-stigmatization as dependent variable and the nine HL subscales as independent variables (original dataset).

SS	Unstandardized *B*	Stand. Coefficients *β*	*t*	*p*-value	95% CI	*VIF*
1. *Feeling understood and supported by healthcare providers*	-0.118	-0.038	-0.239	.812	[-1.107, 0.871]	1.920
2. *Having sufficient information to manage my health*	-0.088	-0.025	-0.155	.877	[-1.223, 1.047]	1.975
3. *Actively managing my health*	-0.262	-0.077	-0.638	.526	[-1.085, 0.560]	1.107

Met opmerkingen [HV111]: Cook's distance moeilijk te berekenen via spss… geen duidelijke resultaten

Met opmerkingen [DD112R111]: ok

4. *Social support for health*	-0.482	-0.203	-1.392	.169	[-1.174, 0.210]	1.629
5. *Appraisal of health information*	-0.091	-0.033	-0.205	.838	[-0.976, 0.794]	1.939
6. *Ability to actively engage with healthcare providers*	-0.555	-0.280	-1.424	.160	[-1.333; 0.224]	2.963
7. *Navigating the healthcare system*	0.083	0.048	0.262	.794	[-0.550; 0.716]	2.579
8. *Ability to find good health information*	0.050	0.024	0.111	.912	[-0.840; 0.939]	3.468
9. *Understanding health information well enough to know what to do*	0.001	0.001	0.003	.998	[-0.888; 0.891]	3.201

Note. B = unstandardized regression coefficient; *β* = standardized regression coefficient; CI = confidence interval; *p*-value = probability value; SS = subscale; *t* = *t* statistic; VIF = variance inflation factor.

Table 7

Results of the multiple linear regression with self-stigmatization as dependent variable and the nine HL subscales, BMI, sex, preferred language, education level and marital status as independent variables (original dataset).

SS	Unstandardized *B*	Stand. Coefficients *β*	*t*	*p*-value	95% CI	*VIF*
1. *Feeling understood and supported by healthcare providers*	-0.056	-0.019	-0.113	.911	[-1.058; 0.946]	1.973
2. *Having sufficient information to manage my health*	-0.285	-0.075	-0.431	.668	[-1.609; 1.039]	2.170

3. *Actively managing my health*	-0.296	-0.090	-0.646	.521	[-1.214; 0.622]	1.396
4. *Social support for health*	-0.291	-0.120	-0.765	.448	[-1.054; 0.472]	1.774
5. *Appraisal of health information*	0.226	0.081	0.525	.602	[-0.637; 1.089]	1.714
6. *Ability to actively engage with healthcare providers*	-0.419	-0.208	-0.964	.339	[-1.291; 0.453]	3.376
7. *Navigating the healthcare system*	0.247	0.138	0.691	.492	[-0.469; 0.963]	2.856
8. *Ability to find good health information*	-0.038	-0.017	-0.076	.940	[-1.030; 0.954]	3.771
9. *Understanding health information well enough to know what to do*	-0.207	-0.094	-0.403	.688	[-1.235; 0.821]	3.891
BMI	0.061	0.056	0.438	.663	[-0.219; 0.341]	1.184
Sex	3.282	0.231	1.701	.095	[-.585; 7.150]	1.330
Marital status	-0.469	-0.110	-0.827	.412	[-1.605; 0.667]	1.268
Education level	0.389	0.075	0.532	.597	[-1.077; 1.855]	1.437
Preferred language	-0.824	-0.157	-1.246	.218	[-2.150; .502]	1.142

Note. B = unstandardized regression coefficient; *β* = standardized regression coefficient; CI = confidence interval; *p*-value = probability value; SS = subscale; *t* = *t* statistic; VIF = variance inflation factor. Sex, marital status and preferred language were coded as nominal variables. Sex: (1) male, (2) female, (3) X, (4) prefer not to say. Marital status: (1) married, (2) not married, (3) cohabiting, (4) single, (5) divorced, (6) widow/widower, (7) other. Preferred language: (1) Dutch, (2) French, (3) English, (4) German, (5) Arab, (6) Other. Educational level was classified as ordinal variable: (1) secondary education (2) Higher education (3) Academic Bachelor's (4) Academic Master's (5) Other.

Discussion

The present study aimed to explore the influence of health literacy (HL) and self-stigmatization on patient delay (PD) among patients living with obesity (PwO). Although the ordinal logistic regression model did not reach significance, this exploratory study revealed notable trends regarding the influence of HL on PD. In contrast to the effect on PD, HL demonstrated a negligible impact on patients' weight-related self-stigma in the original dataset. Conversely, in the MLR utilizing the imputed dataset, HL SS six *Ability to actively engage with healthcare professionals* was negatively associated with weight-related self-stigma. Differences observed between the original and imputed datasets suggest that the missingness was likely informative. Specifically, ptcs with higher levels of self-stigma may have been less likely to complete items regarding their active engagement with HCPs (HL SS six). These results underscore the need for further research to clarify the relationship between HL and weight-related self-stigmatization.

While prior literature has frequently focused on specific domains or HL as a unidimensional construct, all nine HLQ SSs were entered as individual predictors in this study. This approach aligns with previous validation studies, which discourage merging the scales in order to preserve the HLQ content validity and maintain the multidimensional profile of HL. Specifically, higher scores on SS eight *Ability to find good health information* tentatively corresponded with longer durations of PD. This suggests that a higher capacity to find information is associated with more prolonged delay. This counterintuitive result may be explained by the tendency of highly literate patients to engage in extensive self-diagnosis and information-seeking before consulting a HCP. This process might lead to an information overload. These findings align with the research of Chrissini and Panagiotakos (2021), who suggested that lower HL is associated with increased healthcare utilization.

In contrast to the positive predictor SS eight *Ability to find good health information*, SS three *Actively managing my health* and SS seven *Navigating the healthcare system* emerged as negative predictors in this study. This suggests that more proactive patients who manage their health (e.g. keeping a log of weight, recognizing early physical signs) most likely experience shorter delays. Consistent with these findings, PwO who locate services and who are able to advocate on their own behalf at the institutional (e.g. insurance and billing policies) and service level (e.g. use of patient portals), most likely seek help sooner. This aligns with the theoretical framework of HL; pivoting from 'seeking information' to 'taking action' is essential for timely and effective healthcare utilization (Sørensen et al., 2012). In the second stage of the OLR, the unique

Met opmerkingen [HV113]: e.g. op voorhand hun insurance checken, correct gebruik v patient portals etc

contribution of SS three *Actively managing my health* disappeared when the model accounted for the demographics. This suggests an overlap between this SS and a demographic factor (e.g. age, marital status, preferred language).

While weight-related self-stigma showed strong bivariate correlations with several HL scales -specifically SS four *Social support for health* and SS six *Engagement with providers*- this was not a significant unique predictor of PD in the final ordinal regression model when potential confounders were taken into account. The impact of self-stigma on delay thus seems to be largely captured or mediated by HL itself. The psychological burden of stigma may erode a patient's perceived social support (HLQ SS four) and their perceived confidence to engage with providers (HLQ SS six). Consequently, delay increases. When self-stigma, the HL SSs and all potential confounders (age, marital status, BMI, sex, preferred language, education level) are simultaneously entered into the model, HL appears to remain the primary predictor of PD.

Met opmerkingen [HV114]: Mss de specifieke namen verwijderen? Aangezien er een appendix is?

Met opmerkingen [DD115R114]: Nee want lezers kennen dat niet van buiten

Met opmerkingen [HV116]: Dit verwijderen? In abstract was dit te stellig dus hier ook verwijderen?

Met opmerkingen [DD117R116]: Nee want in discussie mag je zelf wat poneren, maar ik zou het toch wat nuanceren 😊 seems, indicates, points to, ...

Met opmerkingen [DD118]: Allemaal goed geschreven maar ik mis een contrast met bestaande literatuur dat dit kan uitleggen of juist niet 😊

Met opmerkingen [HV119R118]: Zo voldoende?

Met opmerkingen [DD120R118]: Yes!

Met opmerkingen [DD121]: Goed stukje!

Met opmerkingen [DD122R121]: Idd collega

Met opmerkingen [HV123R121]: 🤣

Met opmerkingen [DD124]: Te bekijken of al de zaken die over je thesis staan en hierin passen, reeds aan bod gekomen zijn

Met opmerkingen [DD125]: Dit is te veel chatgpt achtig, dit hoort niet in methods section, daar moeten delen van in results (het getal 58 bv) en rest in strengths en limitations

Strengths and limitations

In terms of strengths, the use of ordinal logistic regression ensured a more nuanced understanding of the data than a standard linear regression model. The analysis respected the non-linear nature of time-to-consultation by treating PD as an ordinal variable.

Notably, sensitivity analyses revealed that the direction and significance of the HLQ SSs and self-stigma in the OLRs remained consistent between the original and imputed datasets. This stability confirms the robustness of the findings and suggests that the missing data did not introduce significant non-response bias. Additionally, the EM imputation procedure successfully maximized statistical power by preserving the full sample size (N = 118). Therefore, the model reduced the standard errors of the estimates for HL and self-stigma, resulting in more reliable confidence intervals.

However, a limitation of this study concerns the proportional odds assumption within the ordinal logistic regression (OLR) conducted on the imputed dataset. Although the model demonstrated an acceptable fit, the test of parallel lines was significant. This indicates a violation of this assumption. The influence of specific HL domains may therefore not be uniform across all thresholds of PD. Consequently, the reported coefficients should be interpreted as aggregate effects. The generalizability of the findings across different delay durations may thus be limited. Future studies utilizing larger samples or partial proportional odds models are warranted to further specify these relationships.

Consistently, the relatively small ratio of ptcs to predictors in the original dataset also necessitates careful interpretation of these OLR study findings. The limited sample size may result in an underpowered test. This makes it difficult to identify significant effects for certain variables (e.g. self-stigma). It also increases the risk of 'overfitting', whereby a model catches random noise instead of the underlying relationships. Consequently, the generalizability of the findings is limited.

Additionally, the use of self-report questionnaires may have introduced response bias due to social desirability or inaccurate self-perception. Consequently, the reported outcomes may not fully reflect ptcs' actual experiences or attitudes. However, implementation of a neutral midpoint *equally agree and disagree* in the stigma questionnaire reduced forced choices and might have increased the accuracy of these self-reported attitudes. Consistent with a neutral midpoint, heterogeneous anamneses could also limit this bias in future research.

Regarding methodology, the adapted stigma-questionnaire (SSS) was not validated nor cross-culturally translated due to the limited time. This might compromise the validity and reliability of the study results.

A second methodological limitation of this study is the limited operationalization of PD (i.e., the time interval from symptom onset to first healthcare professional contact). No further information was available regarding subsequent healthcare utilization or clinical pathways following the initial consultation. The efficiency of healthcare service use therefore remains unclear in the current study. Future research is needed to examine whether individuals with higher HL levels and shorter PD also demonstrate more efficient patterns of healthcare utilization.

Fifth, the sample consisted exclusively of patients who were already receiving treatment for weight-related concerns. Therefore, it is possible that these individuals experience lower levels of self-stigma compared to PwO who have not yet sought or received treatment. Although GPs are the first points of contact for PwO, these professionals were challenging to engage due to their high workload and over-enrolment in studies. Future research should include these caregivers in participant recruitment.

In addition, the limited sample size may restrict the generalizability of the findings to broader populations. The final sample (N = 58) was below the ideal 10:1 ratio of ptcs to predictors. This is partly attributable to the attrition of data resulting from incomplete questionnaires. While these missing values were handled through pairwise deletion, this may have slightly reduced the statistical power of the study. However, the consistency observed between the original and imputed models serves as a sensitivity analysis and confirmes that the significant predictors of PD

Met opmerkingen [DD126]: Is het validated or cross culturally translated?

Met opmerkingen [HV127R126]: Validated en cross-culturally translated maar ik ga ervan uit dat een questionnaire die gevalideerd wordt, ook cross-culturally getranslated wordt?

Met opmerkingen [DD128]: Vraag me of dit stukje niet beter in limitaties komt?

Met opmerkingen [DD129]: En ook overbvraagd bij studies?

Met opmerkingen [DD130]: Of je doet een imputation, en zo vermijdt je bias of niet.

Je kan het zelfs nog robuuster doen, wat ideaal zou zijn voor paper.

1 analyse met full data
1 analyse met missing data imputatie

Kijken of results veranderen

Indien niet --> robuste conclusies en meer power!

Met opmerkingen [HV131R130]: Euhh ik ga proberen!

(HLQ SS3, SS7 and SS8) are reliable. This dual-analysis strategy reinforces the methodological rigor of this study and minimizes the risk of Type II errors.

The sample was also predominantly female and had a relatively high mean BMI (M = 35.2). Therefore, these findings may not be fully generalizable to the broader population of individuals living with obesity, particularly men or those in lower BMI categories. In addition, it was not possible to ascertain any causal relationships due to the non-experimental setting.

Furthermore, the marked predominance of responses completed in Dutch potentially influenced the study results and might limit the representativeness of the findings across linguistic groups. This could also reflect cultural or linguistic differences in how individuals engage with the questionnaires or in their willingness to participate.

Additionally, ptcs' native language or language proficiency was not verified prior to completing the questionnaire. Therefore, it remains uncertain to what extent linguistic factors may have affected the validity of their responses.

Finally, participation required scanning a QR code or the use of a digital device with internet access and may have unintentionally introduced selection bias. Individuals with higher HL levels, digital proficiency and/or greater prosperity were presumably more likely to take part in this study. These considerations should be taken into account when evaluating the generalizability and interpretability of the study's findings across multilingual populations.

To conclude, this is one of the first studies that examined HL, PD and stigma concurrently. These findings should therefore be considered preliminary. Future research is required to further elucidate the mechanisms underlying these associations.

Conclusion and practical implications

Ultimately, these research findings suggest that health literacy is a more critical determinant of timely healthcare utilization than the extent to which ptcs experience weight-related self-stigma. Interventions should therefore focus on the empowerment of patients to 'actively manage their health' (e.g. shared decision making and encouraging the use of patient portals.) and 'navigate the healthcare system' . This may lower patient delay in help-seeking behaviour even when the underlying self-stigma remains unaddressed.

Met opmerkingen [HV132]: Nieuw aangebracht

Met opmerkingen [HV133]:
'Is there an association between the health literacy skills of patients living with obesity and the self-stigma they perceive?'
After descriptive statistics, we performed a Pearson's Correlations analysis on these interval-level variables (HL and self-stigma) (Turney, 2024).
If the normality assumption is not met, a Spearman's rank correlation will be conducted (Spearman's Rank-Order Correlation - A Guide To When To Use It, What It Does And What The Assumptions Are., z.d.).

Met opmerkingen [DD134]: Dit moet nog tekstueel leesbaarder gemaakt worden vermoed ik? Inhoud is wel ok.

Met opmerkingen [HV135R134]: Yep!

Met opmerkingen [DD136]: Or use of a digital device?

Ethical guidelines

Firstly, this study was approved by the ethics committee of the University Hospital UZ Brussel/VUB (reference number: B.U.N.: 1432025000100). The ethics committee of the Hospital AZ Groeninge – Sint-Jozefskliniek Izegem (SJKI) and hospital AZ Jan Palfijn Gent also gave approval for participant recruitment.

In addition, participation in this study was completely voluntary. Prior to completing the questionnaires, ptcs were shown an information page explaining the study (see appendix A). Ptcs could continue with the study only after actively closing the information page. This served as confirmation of their consent. Furthermore, this information sheet emphasized that the participant could withdraw from the study at any time.

Furthermore, anonymity and non-binding participation in the study was guaranteed since there was no direct contact between the researchers and the ptcs. As a final point, the data obtained during this study is kept confidential and is stored anonymously.

Acknowledgements

This thesis is the result of the collective support of many people. I would like to take this opportunity to express my gratitude for their guidance and contributions.

First and foremost, I would like to thank my supervisor Diederik De Cock and co-supervisor Lucas Schreurs for the trust and guidance as well as the moments of spontaneity throughout this research process. This thesis would not have been possible without your expertise and assistance.

Secondly, I want to thank all the healthcare professionals who contributed to the recruitment of participants over the past months. This was a demanding process that would not have been possible without your collective efforts, enthusiasm and commitment. In particular prof. dr. De Meyer, dr. Van Vlodrop, the team from Weight Care Centre AZ Jan Palfijn and dr. Veerle Casneuf (AZorg), who made a large effort to motivate patients to participate in this study. Thank you to all the participants who have made to effort to set aside time and dared to be vulnerable. Thank you for your invaluable contributions.

Last but not least, I want to thank my family for supporting me through-out the whole process of writing this Thesis. From the initial brainstorming sessions and troubleshooting unexpected hurdles to the final stages of distributing flyers and finishing this work.

Met opmerkingen [DD137]: Hier nummer geven

Met opmerkingen [HV138R137]: Hoe bedoel je nummer?

Met opmerkingen [HV139R137]: 1432025000100

Met opmerkingen [HV140]: VUB nog toevoegen? Moet dat?

Met opmerkingen [DD141R140]: nee

Met opmerkingen [DD142]: Tis al goed dramalama

Met opmerkingen [HV143R142]: sfeerspons

Met opmerkingen [DD144]: Prijs voor leukste naam

References

1 **Abdullahi, A., Aboagye, R. G., Adedokun, K. A., Adesola, R. O., Global Burden of Disease Study 2021, Musa, S., & Hay, S. I. (2025).** Global, regional, and national prevalence of adult overweight and obesity, 1990-2021, with forecasts to 2050: a forecasting study for the Global Burden of Disease Study 2021. *The Lancet*, 813–838. https://doi.org/10.1016/S0140-6736(25)00355-1

2 **About - MEPs for Action on Obesity. (2025, October 15).** MEPs for Action on Obesity. https://mepactionobesity.eu/

3 **About Obesity - The Belgian Association for the Study of Obesity. (2025, 19 maart).** The Belgian Association For The Study Of Obesity. https://belgium.easo.org/about-obesity/

4 **Alberga, A. S., Edache, I. Y., Forhan, M., & Russell-Mayhew, S. (2019).** Weight bias and health care utilization: a scoping review. Primary Health Care Research & Development, 20, e116. https://doi.org/10.1017/s1463423619000227

5 **Ananthakumar, T., Jones, N. R., Hinton, L., & Aveyard, P. (2019).** Clinical encounters about obesity: Systematic review of patients' perspectives. Clinical Obesity, 10(1), e12347. https://doi.org/10.1111/cob.12347

6 **Andersen, M. M., Varga, S., Folker, A. P., National Institute of Public Health, University of Southern Denmark, & School of Culture and Society. (n.d.).** On the definition of stigma. In *Journal Of Evaluation in Clinical Practice* (Vol. 1, pp. 1–7) [Journal-article]. https://doi.org/10.1111/jep.13684

7 **Baso. (2025, March 4).** Diagnosis and staging of overweight and obesity - The Belgian Association for the Study of Obesity. The Belgian Association for the Study of Obesity. https://belgium.easo.org/nl/diagnosis-and-staging-of-overweight-and-obesity/

8 **Bel, S., Berger, N., Boulbayem, L., De Ridder, K., Lebacq, T., Le Dieu, E., Moyersoen, I., Van Campenhout, E., Vasquez, M. S., Versele, V., & Sciensano. (2023).** Voedselconsumptiepeiling 2022-2023: Gewichtstoestand en gewichtsgerelateerd gedrag bij de Belgische bevolking.

9 **Belgian Health Examination Survey 2018. (2022).** In Sciensano. Sciensano. https://www.sciensano.be/sites/default/files/report_hes_2018_en_final.pdf

10 **Berkman, N. D., Sheridan, S. L., Donahue, K. E., Halpern, D. J., & Crotty, K. (2011).** Low Health Literacy and Health Outcomes: An Updated Systematic Review. *Annals Of Internal Medicine, 155*(2), 97. https://doi.org/10.7326/0003-4819-155-2-201107190-00005

Met opmerkingen [HV145]: Kopiëren van document 'bronnen'

11 **Blüher, M. (2019).** Obesity: global epidemiology and pathogenesis. *Nature Reviews Endocrinology, 15*(5), 288–298. https://doi.org/10.1038/s41574-019-0176-8

12 **Bowman-Busato, J., Schreurs, L., Halford, J. C. G., Yumuk, V., O'Malley, G., Woodward, E., De Cock, D., & Baker, J. L. (2024).** Providing a common language for obesity: the European Association for the Study of Obesity obesity taxonomy. *International Journal Of Obesity, 49*(2), 182–191. https://doi.org/10.1038/s41366-024-01565-9

13 **Budhathoki, S. S., Hawkins, M., Elsworth, G., Fahey, M. T., Thapa, J., Karki, S., Basnet, L. B., Pokharel, P. K., & Osborne, R. H. (2022).** Use of the English Health Literacy Questionnaire (HLQ) with Health Science University Students in Nepal: A Validity Testing Study. *International Journal Of Environmental Research And Public Health, 19*(6), 3241. https://doi.org/10.3390/ijerph19063241

14 **Caterson, I. D., Alfadda, A. A., Auerbach, P., Coutinho, W., Cuevas, A., Dicker, D., Hughes, C., Iwabu, M., Kang, J., Nawar, R., Reynoso, R., Rhee, N., Rigas, G., Salvador, J., Sbraccia, P., Vázquez-Velázquez, V., & Halford, J. C. (2019).** Gaps to bridge: Misalignment between perception, reality and actions in obesity. Diabetes Obesity and Metabolism, 21(8), 1914–1924. https://doi.org/10.1111/dom.13752

15 **Cayci, H. M., Erdogdu, U. E., Demirci, H., Ardic, A., Topak, N. Y., & Taymur, İ. (2017).** Effect of Health Literacy on Help-seeking Behavior in Morbidly Obese Patients Agreeing to Bariatric Surgery. *Obesity Surgery, 28*(3), 791–797. https://doi.org/10.1007/s11695-017-2882-4

16 **Cho, Y. I., Lee, S. D., Arozullah, A. M., & Crittenden, K. S. (2008).** Effects of health literacy on health status and health service utilization amongst the elderly. *Social Science & Medicine, 66*(8), 1809–1816. https://doi.org/10.1016/j.socscimed.2008.01.003

17 **Chong, B., Jayabaskaran, J., Kong, G., Chan, Y. H., Chin, Y. H., Goh, R., Kannan, S., Ng, C. H., Loong, S., Kueh, M. T. W., Lin, C., Anand, V. V., Lee, E. C. Z., Chew, H. J., Tan, D. J. H., Chan, K. E., Wang, J., Muthiah, M., Dimitriadis, G. K., . . . Chew, N. W. (2023).** Trends and predictions of malnutrition and obesity in 204 countries and territories: an analysis of the Global Burden of Disease Study 2019. *EClinicalMedicine, 57*, 101850. https://doi.org/10.1016/j.eclinm.2023.101850

18 **Chrissini, M. K., & Panagiotakos, D. B. (2021).** Health literacy as a determinant of childhood and adult obesity: a systematic review. *International Journal Of Adolescent Medicine And Health, 33*(3), 9–39. https://doi.org/10.1515/ijamh-2020-0275

19 **Cohen, J. (2013).** Statistical Power Analysis for the Behavioral Sciences. https://doi.org/10.4324/9780203771587

20 **Craig, H. C., Walley, D., & Roux, C. W. L. (2024).** What influences patient decisions when selecting an obesity treatment? *Obesity Pillars, 12*, 100123. https://doi.org/10.1016/j.obpill.2024.100123

21 **Dobson, C. M., Russell, A. J., & Rubin, G. P. (n.d.).** Patient delay in cancer diagnosis: what do we really mean and can we be more specific? *BMC Health Services Research, 14*(1). https://doi.org/10.1186/1472-6963-14-387

22 **Dülger, H., & Ayaz-Alkaya, S. (2024).** The effect of health literacy-grounded web-based education on nutrition and exercise behaviours in adolescents: A randomized controlled trial. *International Journal Of Nursing Practice*. https://doi.org/10.1111/ijn.13253

23 **Faruqi, N., Spooner, C., Joshi, C., Lloyd, J., Dennis, S., Stocks, N., Taggart, J., & Harris, M. F. (2015).** Primary health care-level interventions targeting health literacy and their effect on weight loss: a systematic review. *BMC Obesity, 2*(1). https://doi.org/10.1186/s40608-015-0035-7

24 **Flint, S. W., Oliver, E. J., & Copeland, R. J. (2017).** Editorial: Obesity Stigma in Healthcare: Impacts on Policy, Practice, and Patients. Frontiers in Psychology, 8, 2149. https://doi.org/10.3389/fpsyg.2017.02149

25 **Flint, S. W., Vázquez-Velázquez, V., Brocq, S. L., & Brown, A. (2025).** The real-life experiences of people living with overweight and obesity: A psychosocial perspective. *Diabetes Obesity and Metabolism*, *27*(S2), 35–47. https://doi.org/10.1111/dom.16255

26 **Foster, G. D., Wadden, T. A., Makris, A. P., Davidson, D., Sanderson, R. S., Allison, D. B., & Kessler, A. (2003).** Primary Care Physicians' Attitudes about Obesity and Its Treatment. *Obesity Research, 11*(10), 1168–1177. https://doi.org/10.1038/oby.2003.161

27 **Friis, K., Lasgaard, M., Rowlands, G., Osborne, R. H., & Maindal, H. T. (2016).** Health Literacy Mediates the Relationship Between Educational Attainment and Health Behavior: A Danish Population-Based Study. *Journal Of Health Communication, 21*(sup2), 54–60. https://doi.org/10.1080/10810730.2016.1201175

28 **Fritz, M. S., & MacKinnon, D. P. (2007).** Required Sample Size to Detect the Mediated Effect. *Psychological Science, 18*(3), 233–239. https://doi.org/10.1111/j.1467-9280.2007.01882.x

29 **Griffin, J. M., Partin, M. R., Noorbaloochi, S., Grill, J. P., Saha, S., Snyder, A., Nugent, S., Simon, A. B., Gralnek, I., Provenzale, D., & Van Ryn, M. (2010).** Variation in Estimates of Limited Health Literacy by Assessment Instruments and Non-Response Bias. *Journal Of General Internal Medicine, 25*(7), 675–681. https://doi.org/10.1007/s11606-010-1304-2

30 **Hackett, T. P., Cassem, N. H., & Raker, J. W. (1973).** Patient Delay in Cancer. *New England Journal of Medicine, 289*(1), 14-20. https://doi.org/10.1056/nejm197307052890104

31 **Halding, A., Heggdal, K., & Wahl, A. (2010).** Experiences of self-blame and stigmatisation for self-infliction among individuals living with COPD. *Scandinavian Journal Of Caring Sciences, 25*(1), 100–107. https://doi.org/10.1111/j.1471-6712.2010.00796.x

32 **Harrop, E. N., Hutcheson, R., Harner, V., Mensinger, J. L., & Lindhorst, T. (2023).** "You Don't Look Anorexic": Atypical anorexia patient experiences of weight stigma in medical care. Body Image, 46, 48–61. https://doi.org/10.1016/j.bodyim.2023.04.008

33 **Hawkins, M., Gill, S. D., Batterham, R., Elsworth, G. R., & Osborne, R. H. (2017).** The Health Literacy Questionnaire (HLQ) at the patient-clinician interface: a qualitative study of what patients and clinicians mean by their HLQ scores. *BMC Health Services Research, 17*(1). https://doi.org/10.1186/s12913-017-2254-8

34 **Iswanto, E. D., & Ayubi, D. (2023).** The Relationship of Mental Health Literacy to Help-Seeking Behavior: Systematic Review. *Journal Of Social Research, 2*(3), 755–764. https://doi.org/10.55324/josr.v2i3.726

35 **Judy. (2021, June 10).** *Correlaties*. Data-affinity. https://data-affinity.nl/statistiek/sterkte-van-een-verband-bepalen.html

36 **Lamot, M., & Kirbiš, A. (2024).** The validity and reliability of the Slovenian version of the health literacy questionnaire short-form (HLS-EU-Q16) among adults and older adults. *Frontiers in Public Health, 12*. https://doi.org/10.3389/fpubh.2024.1474539

37 **Lovrić, B., Placento, H., Farčić, N., Baligač, M. L., Mikšić, Š., Mamić, M., Jovanović, T., Vidić, H., Karabatić, S., Cviljević, S., Zibar, L., Vukoja, I., & Barać, I. (2022).** Association between Health Literacy and Prevalence of Obesity, Arterial Hypertension, and Diabetes Mellitus. *International Journal Of Environmental Research And Public Health, 19*(15), 9002. https://doi.org/10.3390/ijerph19159002

38 **Maindal, H. T., Kayser, L., Norgaard, O., Bo, A., Elsworth, G. R., & Osborne, R. H. (2016).** Cultural adaptation and validation of the Health Literacy Questionnaire (HLQ):

robust nine-dimension Danish language confirmatory factor model. *SpringerPlus, 5*(1). https://doi.org/10.1186/s40064-016-2887-9

39 **Massachusetts Medical Society. (2010).** *The New England Journal of Medicine.* In NEJM Archive. https://nejm.org

40 **Michou, M., Panagiotakos, D. B., & Costarelli, V. (2018).** Low health literacy and excess body weight: a systematic review. *Central European Journal Of Public Health, 26*(3), 234–241. https://doi.org/10.21101/cejph.a5172

41 **Mold, F., & Forbes, A. (2011).** Patients' and professionals' experiences and perspectives of obesity in health-care settings: a synthesis of current research. Health Expectations, 16(2), 119–142. https://doi.org/10.1111/j.1369-7625.2011.00699.x

42 **Novo Nordisk. (2020, december).** *ACTION IO Study: Awareness, Care & Treatment In Obesity Management an International Observation* [Abstract/Factsheet].

43 **OBESITY PLATFORM BELGIUM & BELGIAN ASSOCIATION FOR THE STUDY OF OBESITY. (n.d.).** POLICY RECOMMENDATIONS FOR a HOLISTIC APPROACH TO OBESITY AS a CHRONIC DISEASE. In *WHITE PAPER* [Report]. https://belgium.easo.org/wp-content/uploads/2024/07/120724_White-Paper_EN.pdf

44 **Oleski, J., Mota, N., Cox, B. J., & Sareen, J. (2010).** Perceived Need for Care, Help Seeking, and Perceived Barriers to Care for Alcohol Use Disorders in a National Sample. *Psychiatric Services, 61*(12), 1223–1231. https://doi.org/10.1176/ps.2010.61.12.1223

45 **Ong, K. L., Stafford, L. K., McLaughlin, S. A., Boyko, E. J., Vollset, S. E., Smith, A. E., Dalton, B. E., Duprey, J., Cruz, J. A., Hagins, H., Lindstedt, P. A., Aali, A., Abate, Y. H., Abate, M. D., Abbasian, M., Abbasi-Kangevari, Z., Abbasi-Kangevari, M., ElHafeez, S. A., Abd-Rabu, R., . . . Azadnajafabad, S. (2023).** Global, regional, and national burden of diabetes from 1990 to 2021, with projections of prevalence to 2050: a systematic analysis for the Global Burden of Disease Study 2021. *The Lancet, 402*(10397), 203–234. https://doi.org/10.1016/s0140-6736(23)01301-6

46 **Osborne, R. (2019).** HLQ Item intent guide.

47 **Osborne, R. H., Batterham, R. W., Elsworth, G. R., Hawkins, M., & Buchbinder, R. (2013).** The grounded psychometric development and initial validation of the Health Literacy Questionnaire (HLQ). *BMC Public Health, 13*(1). https://doi.org/10.1186/1471-2458-13-658

48 **Osborne, R. H., Elmer, S., Hawkins, M., Cheng, C., Swinburne University of Technology, & University of Copenhagen. (n.d.).** *The Ophelia Manual.*

49 **Parker, R., Williams, M., Baker, D. W., Emory University, University of Kentucky, Northwestern University, Accreditation Council for Graduate Medical Education, & Schwartzberg, J. (1999).** Health Literacy: Report of the Council on Scientific Affairs. *JAMA The Journal Of The American Medical Association.* https://doi.org/10.1001/jama.281.6.552

50 **Parker, R. M., Wolf, M. S., & Kirsch, I. (2008).** Preparing for an Epidemic of Limited Health Literacy: Weathering the Perfect Storm. *Journal Of General Internal Medicine, 23*(8), 1273–1276. https://doi.org/10.1007/s11606-008-0621-1

51 **Puhl, R. M., & Heuer, C. A. (2009).** The Stigma of Obesity: A review and update. *Obesity, 17*(5), 941–964. https://doi.org/10.1038/oby.2008.636

52 **Puhl, R. M., Lessard, L. M., Himmelstein, M. S., & Foster, G. D. (2021).** The roles of experienced and internalized weight stigma in healthcare experiences: Perspectives of adults engaged in weight management across six countries. *PLoS ONE*, *16*(6), e0251566. https://doi.org/10.1371/journal.pone.0251566

53 **Qualtrics. (2024).** Qualtrics survey platform [Computer software]. Qualtrics. https://www.qualtrics.com

54 **Raves, D. M., Brewis, A., Trainer, S., Han, S., & Wutich, A. (2016).** Bariatric Surgery Patients' Perceptions of Weight-Related Stigma in Healthcare Settings Impair Post-surgery Dietary Adherence. Frontiers in Psychology, 7, 1497. https://doi.org/10.3389/fpsyg.2016.01497

55 **Rigas, G., Williams, K., Sumithran, P., Brown, W. A., Swinbourne, J., Purcell, K., & Caterson, I. D. (2020).** Delays in healthcare consultations about obesity — Barriers and implications. *Obesity Research & Clinical Practice, 14*(5), 487–490. https://doi.org/10.1016/j.orcp.2020.08.003

56 **Sadeghi, S., Brooks, D., Stagg-Peterson, S., & Goldstein, R. (2013).** Growing Awareness of the Importance of Health Literacy in Individuals with COPD. *COPD Journal Of Chronic Obstructive Pulmonary Disease, 10*(1), 72–78. https://doi.org/10.3109/15412555.2012.727919

57 **Salle, L., Foulatier, O., Coupaye, M., Frering, V., Constantin, A., Joly, A., Braithwaite, B., Gharbi, F., & Jubin, L. (2024).** ACTION-FRANCE: Insights into Perceptions, Attitudes,

and Barriers to Obesity Management in France. *Journal of Clinical Medicine, 13*(12), 3519. https://doi.org/10.3390/jcm13123519

58 **Sansom-Daly, U. M., Lin, M., Robertson, E. G., Wakefield, C. E., McGill, B. C., Girgis, A., & Cohn, R. J. (2016).** Health Literacy in Adolescents and Young Adults: An Updated Review. *Journal Of Adolescent And Young Adult Oncology, 5*(2), 106–118. https://doi.org/10.1089/jayao.2015.0059

59 **Spearman's Rank-Order Correlation - A guide to when to use it, what it does and what the assumptions are. (n.d.).** https://statistics.laerd.com/statistical-guides/spearmans-rank-order-correlation-statistical-guide.php

60 **Sørensen, K., Pelikan, J. M., Röthlin, F., Ganahl, K., Slonska, Z., Doyle, G., Fullam, J., Kondilis, B., Agrafiotis, D., Uiters, E., Falcon, M., Mensing, M., Tchamov, K., Van Den Broucke, S., & Brand, H. (2015).** Health literacy in Europe: comparative results of the European health literacy survey (HLS-EU). *European Journal Of Public Health, 25*(6), 1053–1058. https://doi.org/10.1093/eurpub/ckv043

61 **Sørensen, K., Van Den Broucke, S., Fullam, J., Doyle, G., Pelikan, J., Slonska, Z., & Brand, H. (2012).** Health literacy and public health: A systematic review and integration of definitions and models. *BMC Public Health*, *12*(1), 80. https://doi.org/10.1186/1471-2458-12-80

62 **Statistics Solutions. (2024, 31 december).** A Comprehensive Guide to Structural Equation Modeling. https://www.statisticssolutions.com/free-resources/directory-of-statistical-analyses/structural-equation-modeling/

63 **Tang, C., Wu, X., Chen, X., Pan, B., & Yang, X. (2019).** Examining income-related inequality in health literacy and health-information seeking among urban population in China. *BMC Public Health, 19*(1). https://doi.org/10.1186/s12889-019-6538-2

64 **Tang, F., Zhong, X., Liu, S., Guo, X., & Li, D. (2023).** Pathway analysis of the impact of health literacy, social support and self-efficacy on self-management behaviors in pregnant women with gestational diabetes mellitus. *Frontiers in Public Health, 11*. https://doi.org/10.3389/fpubh.2023.1188072

65 **The Pathophysiology of Obesity - EASO. (2025, 20 februari).** EASO. https://easo.org/video/the-pathophysiology-of-obesity/

66 **Turney, S. (2024, February 10).** Pearson correlation coefficient (r) | Guide & examples. *Scribbr.* https://www.scribbr.com/statistics/pearson-correlation-coefficient/

67 **Vartanian, L. R., & Shaprow, J. G. (2007).** Effects of weight stigma on exercise motivation and behavior. *Journal of Health Psychology, 13*(1), 131–138. https://doi.org/10.1177/1359105307084318

68 **Vogel, D. L., Wade, N. G., Haake, S., & Iowa State University. (2006).** Measuring the Self-Stigma Associated With Seeking Psychological Help. *Journal Of Counseling Psychology*, 325–337. https://doi.org/10.1037/0022-0167.53.3.325

69 **Wanes, V. ((PhD) Student), De Cock, D. (Promotor). (2025).** Patient delay in obesity management: exploring help-seeking behavior among adults with obesity in Belgium

70 **Weight-loss (Metabolic & Bariatric) Surgery - NIDDK. (n.d.).** National Institute Of Diabetes And Digestive And Kidney Diseases. https://www.niddk.nih.gov/health-information/weight-management/bariatric-surgery

71 **Wetzel, K. E., & Himmelstein, M. S. (2024).** Women's relationships with healthcare and providers: The role of weight stigma in healthcare and weight bias internalization. Annals of Behavioral Medicine, 58(12), 789–798. https://doi.org/10.1093/abm/kaae044

72 **World Health Organization. (2004).** Global strategy on diet, physical activity and health. In *FIFTY-SEVENTH WORLD HEALTH ASSEMBLY.* https://apps.who.int/gb/ebwha/pdf_files/WHA57/A57_R17-en.pdf

73 **World Health Organization. (2024).** World health statistics 2024: monitoring health for the SDGs, Sustainable Development Goals.

74 **World Health Organization: WHO. (2024, 1 maart).** Obesity and overweight. https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight

75 **World Health Organization: WHO. (2024, augustus 5).** Health literacy. https://www.who.int/news-room/fact-sheets/detail/health-literacy

76 **Yu, B. C. L., Chio, F. H. N., Chan, K. K. Y., Mak, W. W. S., Zhang, G., Vogel, D., & Lai, M. H. C. (2022).** Associations between public and self-stigma of help-seeking with help-seeking attitudes and intention: A meta-analytic structural equation modeling approach. *Journal Of Counseling Psychology.* https://doi.org/10.1037/cou0000637

77 **Schreurs, L., De Smedt, C., Goris, E., Unuane, D., Schoneveld, M., Steenackers, N., Pazmiño, S., Gies, I., Van Der Schueren, B., & De Cock, D. (2025).** "Just put in a little more effort": the help-seeking experience of patients living with obesity. *International Journal of Obesity.* https://doi.org/10.1038/s41366-025-01867-6

78 **Schreurs, L., Gies, I., Van Der Schueren, B., & De Cock, D. (2025).** Systematic literature review on the awareness of obesity in adults and children living with obesity, the general public and healthcare professionals. *International Journal of Obesity.* https://doi.org/10.1038/s41366-025-01855-w

6. Appendix

Appendix A: Participant Information Sheet

U wordt uitgenodigd om deel te nemen aan een klinische studie.
Door middel van vragenlijsten bij patiënten met obesitas en overgewicht willen wij de health literacy (HL), de mate van zelf-stigma en het hulpzoekgedrag in kaart brengen. HL verwijst naar het toegang krijgen tot informatie, deze informatie begrijpen en gebruiken op een manier die een goede gezondheid bevordert en behoudt. Zelf-stigma is het internaliseren van een negatieve labeling van een persoon, kenmerken van een persoon, of groep. Er zal worden gestart met een aantal demografische vragen, vragen over uw geraadpleegde zorgverleners en het tijdstip van uw consultaties. Met de Health Literacy Questionnaire (HLQ) worden uw kennis en vaardigheden over uw gezondheid in kaart gebracht. Aan de hand van een derde vragenlijst worden uw percepties over het zoeken naar hulp voor uw gezondheidsklachten in kaart gebracht.
Voordat u akkoord gaat om aan deze studie deel te nemen, vragen wij u om kennis te nemen van wat deze studie zal inhouden op het gebied van organisatie, zodat u een welbewuste beslissing kunt nemen. Dit wordt een "geïnformeerde toestemming" genoemd. Wij vragen u de volgende pagina's met informatie aandachtig te lezen. Hebt u vragen, aarzel dan niet om contact op te nemen met Hanne Vandevelde (hanne.vandevelde@vub.be of +32491300410).

Ik heb bovenstaande informatie gelezen en begrepen en heb antwoord gekregen op al mijn vragen betreffende deze studie. Ik stem toe om deel te nemen.

Met opmerkingen [HV146]: Moeten die questionnaires in alle talen gedeeld worden?

Met opmerkingen [DD147R146]: Nee voor mij niet

Met opmerkingen [HV148]: Op volgorde zetten zoals vermeld in tekst

Met opmerkingen [HV149R148]: !!!! Op einde doen nadat alle volgordes vaststaan

Appendix B: Cover Lettre E-mail

ONDERWERP: UITNODIGING TOT DEELNAME AAN EEN STUDIE OMTRENT GEZONDHEIDSKENNIS, ZELF-STIGMA EN HULPZOEKGEDRAG

Geachte,

De obesitasepidemie is algemeen bekend, net als de enorme impact op de incidentie, sterfte en kosten ervan. Hoewel obesitas de oorzaak is van veel andere ziektes, richt het huidige gezondheidszorgsysteem zich meer op de behandeling van deze andere ziektes dan op de onderliggende oorzaak. Obesitas krijgt meestal geen specifieke aandacht, behalve weinig concrete adviezen. Er is een betere behandeling nodig voor patiënten met overgewicht en obesitas. Er bestaan opties, zoals bariatrische chirurgie en obesitas medicatie, maar we weten onvoldoende welke patiënten het meeste voordeel hebben bij welke therapie. Een snellere opsporing van patiënten die kampen met gezondheidsproblemen als gevolg van overgewicht en obesitas zou kunnen helpen om het succes van obesitasbehandelingen te verbeteren.
Gezondheidszorgbeoefenaars zijn echter over het algemeen terughoudend om deze problemen in een vroeg stadium met hun patiënten te bespreken. De oorzaak en omvang van deze vertraging in behandeling is onbekend en het in kaart brengen en analyseren van de gevolgen ervan zal waardevolle inzichten opleveren in de efficiëntie - of het gebrek daaraan.
Eén van de factoren die mogelijks het hulpzoekgedrag van patiënten met obesitas beïnvloedt, is hun kennis en vaardigheden betreffende gezondheid. Door deze in kaart te brengen, kunnen we opsporen welke vaardigheden patiënten ondersteunen om hulp te zoeken wanneer ze gezondheidsproblemen ervaren. Ook de mate waarin personen zelf-stigma ervaren over de gezondheidsklachten waarmee ze kampen, kan een invloed hebben op de mate waarin iemand een therapeut raadpleegt.
Deze studieresultaten zullen waardevolle inzichten opleveren voor zorgbeoefenaars om de drempel tot het zoeken van hulp te verlagen.

Doel van dit onderzoek

Wij nodigen u uit om aan deze studie deel te nemen omdat u kan helpen bij het in kaart brengen van de gezondheidsvaardigheden en zelf-stigmatisering die mogelijks invloed hebben op hulpzoekgedrag bij patiënten met obesitas. Door dit verband in kaart te brengen, kan de zorg voor patiënten met obesitas verbeterd worden.

Wat wordt er van u verwacht ?

Door middel van een vragenlijst willen wij de kennis, het bewustzijn en de vaardigheden omtrent gezondheid in kaart brengen bij patiënten met obesitas. Daarnaast willen we ook het hulpzoekgedrag en de mate van zelf-stigmatisering van patiënten met obesitas nagaan door middel van twee bijkomende vragenlijsten. U kunt deze vragenlijsten invullen op een tijdstip dat voor u gepast is. Het invullen van deze vragenlijsten zal ongeveer 15 minuten van uw tijd in beslag nemen.

Privacy

Het invullen van deze vragenlijsten zal volledig anoniem gebeuren. Dankzij het scannen van de QR-code, kan u onafhankelijk van uw zorgverlener deelnemen aan deze studie. Er zal bij het bekendmaken van de studieresultaten op geen enkel moment verwezen worden naar uw naam, persoonsgegevens of organisatie.

Vrijwillige deelname

Uw deelname aan dit onderzoek is volledig vrijwillig. U kunt zich op ieder moment uit het onderzoekterugtrekken zonder hiervoor een reden te moeten geven.

Vergoeding

U ontvangt geen financiële vergoeding voor deelname aan dit onderzoek. Het invullen van de vragenlijsten gebeurt op vrijwillige basis

Ethische richtlijnen

Deze studie werd goedgekeurd door de ethisch commissie van het universitaire ziekenhuis UZ Brussel/VUB.

U wenst deel te nemen aan het onderzoek of hebt nog vragen?

Indien u nog vragen heeft, aarzel dan niet om contact op te nemen met Hanne Vandevelde (hanne.vandevelde@vub.be of +32491300410). U hebt het recht om zorgvuldig en voldoende geïnformeerd te zijn. Als u beslist deel te nemen, maken we een afspraak voor het invullen van deze vragen.

Alvast dank voor uw interesse!

Met vriendelijke groeten,
Hanne Vandevelde

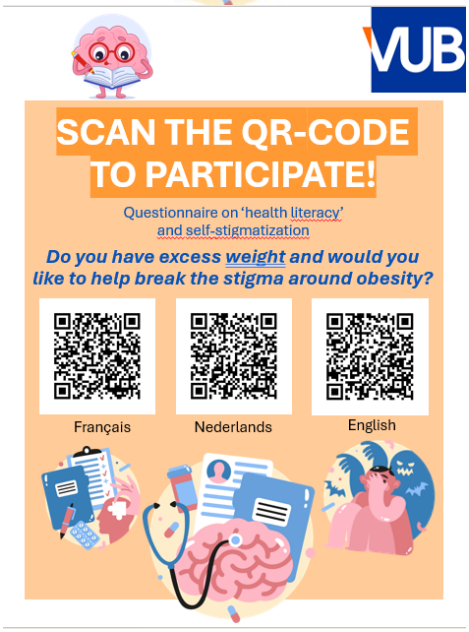
Masterstudente psychologie aan de Vrije Universiteit Brussel (VUB)

Appendix C: posters/flyers

Met opmerkingen [HV150]: Onder elke flyer uitleg?

Met opmerkingen [DD151R150]: Moet niet uw focus zijn 😉






VUB
VRIJE
UNIVERSITEIT
BRUSSEL
SCANNEZ LE CODE QR ET PARTICIPEZ!
Questionnaire sur votre connaissance de la santé et l'autostigmatisation
Avez-vous un excès de poids et souhaitez-vous aussi contribuer à faire évoluer les représentations de l'obésité?
Français
Nederlands
English

Appendix D: Health Literacy Questionnaire (Dutch)

Informatie over de vragenlijst en invulinstructie
Deze vragenlijst bestaat uit twee delen.
In **deel 1** wordt u gevraagd om aan te geven in welke mate u het **oneens** of **eens** bent met een aantal stellingen.
In **deel 2** wordt u gevraagd om aan te geven hoe **makkelijk** of **moeilijk** u een aantal taken vindt.
Kruis bij elke stelling of taak **het antwoord aan** dat **op dit moment** het beste bij u past.
Wilt u bij **elke** stelling of taak een antwoord aankruisen.

Een voorbeeld

		Zeer mee oneens	Mee oneens	Mee eens	Zeer mee eens
1.	De wereld is plat	☒	☐	☐	☐

Mevrouw Jannie Burgers heeft aangegeven dat ze het **zeer mee oneens** is met deze stelling.

Deel 1 van de vragenlijst begint hier.

Geef aan in welke mate u het **oneens** of **eens** bent met de volgende stellingen. Kruis per stelling één antwoord aan.

Kruis op deze manier uw antwoord aan: ☒

		Zeer mee oneens	Mee oneens	Mee eens	Zeer mee eens
1	Ik vind dat ik goede informatie heb over gezondheid	☐	☐	☐	☐
2	Ik heb ten minste één zorgverlener die mij goed kent	☐	☐	☐	☐
3	Ik kan terecht bij veel mensen die me begrijpen en steunen	☐	☐	☐	☐
4	Ik vergelijk gezondheidsinformatie uit verschillende bronnen	☐	☐	☐	☐
5	Als ik me ziek voel, begrijpen de mensen om me heen echt wat ik doormaak	☐	☐	☐	☐
6	Ik ben vrij veel tijd bewust bezig met mijn gezondheid	☐	☐	☐	☐
7	Als ik nieuwe informatie over gezondheid tegenkom, ga ik na of deze klopt of niet	☐	☐	☐	☐

Deel 1 – vervolg

Geef aan in welke mate u het **oneens** of **eens** bent met de volgende stellingen. Kruis per stelling **één** antwoord aan.

		Zeer mee oneens	Mee oneens	Mee eens	Zeer mee eens
8	Ik heb ten minste één zorgverlener met wie ik mijn gezondheidsproblemen kan bespreken	☐	☐	☐	☐
9	Ik maak plannen voor wat ik moet doen om zo gezond mogelijk te zijn	☐	☐	☐	☐
10	Ik heb genoeg informatie om met mijn gezondheidsproblemen te kunnen omgaan	☐	☐	☐	☐
11	Als ik hulp nodig heb, heb ik ruim voldoende mensen op wie ik kan rekenen	☐	☐	☐	☐
12	Ik vergelijk altijd gezondheidsinformatie van verschillende bronnen en beslis dan wat het beste voor me is	☐	☐	☐	☐
13	Ondanks andere dingen in mijn leven maak ik tijd om bezig te zijn met mijn gezondheid	☐	☐	☐	☐
14	Ik weet zeker dat ik alle benodigde informatie heb om effectief met mijn gezondheid om te kunnen gaan	☐	☐	☐	☐
15	Ik heb ten minste één persoon die met mij mee kan gaan naar medische afspraken	☐	☐	☐	☐
16	Ik weet hoe ik erachter kan komen of de gezondheidsinformatie die ik krijg wel of niet klopt	☐	☐	☐	☐
17	Ik beschik over de zorgverleners die ik nodig heb om uit te zoeken wat ik moet doen	☐	☐	☐	☐
18	Ik stel mijn eigen doelen om gezond en fit te zijn	☐	☐	☐	☐
19	Ik krijg veel steun van familie of vrienden	☐	☐	☐	☐
20	Ik vraag aan zorgverleners wat de kwaliteit is van de gezondheidsinformatie die ik vind	☐	☐	☐	☐
21	Er zijn dingen die ik regelmatig doe om mijn gezondheid te verbeteren	☐	☐	☐	☐
22	Ik kan rekenen op ten minste één zorgverlener	☐	☐	☐	☐
23	Ik beschik over alle informatie die ik nodig heb om op mijn gezondheid te letten	☐	☐	☐	☐

Deel 2 van de vragenlijst begint hier

Geef aan hoe **makkelijk** of **moeilijk** het op dit moment voor u is om de volgende taken te doen. Kruis per stelling **één** antwoord aan.

Kruis op deze manier uw antwoord aan: ☒

		Kan ik niet of is altijd moeilijk	Meestal moeilijk	Soms moeilijk	Meestal makkelijk	Altijd makkelijk
1	De juiste zorg vinden	☐	☐	☐	☐	☐
2	Ervoor zorgen dat zorgverleners uw problemen goed begrijpen	☐	☐	☐	☐	☐
3	Informatie vinden over gezondheidsproblemen	☐	☐	☐	☐	☐
4	In staat zijn om uw zorgen over uw gezondheid met een zorgverlener te bespreken	☐	☐	☐	☐	☐
5	Er vertrouwen in hebben dat u medische formulieren op de juiste manier invult	☐	☐	☐	☐	☐
6	Gezondheidsinformatie vinden op meerdere verschillende plekken	☐	☐	☐	☐	☐
7	Goede gesprekken over uw gezondheid voeren met artsen	☐	☐	☐	☐	☐
8	Een afspraak krijgen met de zorgverleners die ik nodig heb	☐	☐	☐	☐	☐
9	De aanwijzingen van zorgverleners op de juiste wijze opvolgen	☐	☐	☐	☐	☐
10	Informatie over gezondheid krijgen zodat u altijd op de hoogte bent van de beste informatie	☐	☐	☐	☐	☐
11	Bepalen bij welke zorgverlener u moet zijn	☐	☐	☐	☐	☐
12	Schriftelijke gezondheidsinformatie lezen en begrijpen	☐	☐	☐	☐	☐
13	Zorgen dat u op de juiste plek komt, waar u de benodigde zorg krijgt	☐	☐	☐	☐	☐

Deel 2 – vervolg

Geef aan hoe **makkelijk** of **moeilijk** het op dit moment voor u is om de volgende taken te doen. Kruis per stelling **één** antwoord aan.

		Kan ik niet of is altijd moeilijk	Meestal moeilijk	Soms moeilijk	Meestal makkelijk	Altijd makkelijk
14	Gezondheidsinformatie krijgen in woorden die u begrijpt	☐	☐	☐	☐	☐
15	Dingen bespreken met zorgverleners tot u alles begrijpt wat u moet weten	☐	☐	☐	☐	☐
16	Achterhalen op welke zorgvoorzieningen u recht hebt	☐	☐	☐	☐	☐
17	Lezen en begrijpen van alle informatie op etiketten op geneesmiddelen	☐	☐	☐	☐	☐
18	Zelf gezondheidsinformatie krijgen	☐	☐	☐	☐	☐
19	Uitzoeken wat de beste zorg voor u is	☐	☐	☐	☐	☐
20	Vragen stellen aan zorgverleners om de gezondheidsinformatie te krijgen die u nodig hebt	☐	☐	☐	☐	☐
21	Begrijpen wat zorgverleners u vragen te doen	☐	☐	☐	☐	☐

Bedankt dat u de tijd nam om deze vragenlijst in te vullen.

Appendix E: Adapted Self-Stigmatization Of Seeking Help Scale (SSS)

INSTRUCTIE: Soms overwegen mensen met gewichtsproblemen om professionele hulp (huisarts, diëtist,…) te zoeken. Dit kan reacties oproepen over wat hulp zoeken voor u zou betekenen. Gebruik de 5-puntenschaal om aan te geven in welke mate elk item beschrijft hoe u in deze situatie zou reageren.

1 = Helemaal niet mee eens 2 = Niet mee eens 3 = Neutraal 4 = Eens 5 = Helemaal mee eens

1. Ik zou me zwak voelen als ik naar een arts of diëtist zou gaan voor professionele hulp.
2. Mijn zelfvertrouwen zou NIET bedreigd worden als ik professionele begeleiding zou zoeken.
3. Als ik medische hulp zou zoeken, zou ik me minder intelligent voelen.
4. Mijn zelfvertrouwen zou toenemen als ik met een arts of diëtist zou praten.
5. Mijn kijk op mezelf zou niet veranderen alleen omdat ik de keuze zou maken om naar een professionele zorgverlener te gaan.
6. Ik zou me minderwaardig voelen als ik een arts of diëtist om hulp zou vragen.
7. Ik zou me goed voelen over mezelf als ik de keuze zou maken om professionele begeleiding te zoeken.
8. Als ik naar een arts of diëtist zou gaan, zou ik minder tevreden zijn met mezelf.
9. Mijn zelfvertrouwen zou hetzelfde blijven als ik medische hulp zocht voor een gewichtsprobleem dat ik niet kon oplossen.
10. Ik zou me slechter over mezelf voelen als ik mijn eigen gewichtsproblemen niet kon oplossen.

Items 2, 4, 5, 7 en 9 worden omgekeerd gescoord.

Appendix F: Questionnaire Patient Delay

1. **Wat is uw geslacht?**
   - Man
   - Vrouw
   - X
   - Wens ik niet te zeggen
2. **Wat is uw leeftijd?**

   …. Jaar
3. **Bent u geboren in België?**
   - Nee
   - Ja
4. **Wat is uw burgerlijke staat?**

- Getrouwd
- Ongetrouwd
- Samenwonend
- Alleenstaand
- Gescheiden
- Nabestaande (weduwnaar/weduwe)
- Andere ….

5. **Wat is uw hoogst behaalde diplomaniveau?**

- Basisschool
- Middelbaar
- Hogeschool bachelor
- Universitaire bachelor
- Universitaire master
- Andere….

6. **In welke taal/talen kunt u zich comfortabel uitdrukken?**
   - Nederlands
   - Frans
   - Engels
   - Duits
   - Arabisch
   - Andere….
7. **Wat is uw huidige gewicht?**

   ……kg
8. **Wat is uw lengte (in centimeter)?**

   …centimeter
9. **Hoe zou u momenteel uw gezondheid omschrijven?**

- Zeer slecht
- Slecht
- Redelijk
- Goed
- Zeer goed

10. **Hoe vaak beoefent u matig tot intensieve lichamelijke activiteit uit (wandelen; fietsen; zwemmen; sporten; zwaardere huishoudelijke klussen: ramen wassen, in de tuin werken)?**

- Meer dan of gelijk aan 5 dagen per week (30 min matig intensieve lichamelijke activiteit)
- 1-4 dagen per week (30 min matig intensieve lichamelijke activiteit)
- Minder dan één dag per week (30 min matig intensieve lichamelijke activiteit)

11. **Heeft u geleefd met een van volgende gezondheidsaandoeningen in de afgelopen 12 maanden?**
    a. Diabetes type 1
    b. Diabetes type 2
    c. Psychologische problemen
    d. Maag-darmproblemen
    e. Hart en vaatziekten (hartaanval, beroerte, hoge bloeddruk, vernauwde bloedvaten, hoge cholesterol)
    f. Longproblemen of kortademigheid
    g. Slaapproblemen

h. Spier- en gewrichtsziekten
i. Kanker
j. Gynaecologische problemen
k. Schildklier problemen
l. Geen van bovenstaande
m. Andere, specifieer…

12. Leeft u met obesitas?
- Zo nee, **heeft u ooit geleefd met obesitas**: Ja/Nee
  - Zo ja, **Specifieer wanneer u heeft beseft dat u leefde met obesitas: gelieve een zo specifieke mogelijke schatting te geven van de datum wanneer u dit heeft beseft:** dag: … maand: … jaar (het belangrijkste):…

13. Heeft u ooit zelf hulp gezocht bij een zorgverlener voor uw obesitas op eigen initiatief?
- Nee
- Ja

14. Hoeveel tijd zat er tussen het moment dat u besefte dat u obesitas heeft en het moment dat u voor de eerste keer een afspraak met een zorgverlener?
- Tijdsduur (weken/maanden/jaren): (…/…/…)

15. Hoeveel pogingen tot gewichtsafname heeft u zelf ondernomen vooraleer u de eerste keer hulp heeft gezocht bij een zorgverlener of aangeboden gekregen omtrent uw obesitas?
Aantal….

16. Indien ≥1 poging, wat heeft u dan gedaan?
a. Dieet zonder ondersteuning van zorgverleners
   i. Aantal keer een nieuw dieet geprobeerd….
b. Fysieke activiteit zonder ondersteuning van zorgverleners
   i. Aantal keer een poging tot meer fysieke activiteit ….
c. Psychologische begeleiding
d. Medicatie
e. Natuurlijke producten
f. Andere; specifieer….

Appendix G: Participating Healthcare Professionals

Hospital departments	Pharmacies	General Practitioners
1. AZorg (gastroenterology, General and abdominal surgery, department of anaesthesia, obesity centre, pulmonology department) 2. AZ Jan Palfijn Gent (sleep centre, weight management centre) 3. AZ Groeninge - Sint-Jozefskliniek Izegem (SJKI) (obesity centre, department endocrinology and diabetics care) 4. AZ Alma (obesity centre) 5. AZ Oostende (department endocrinology) 6. UZ Gent (anaesthesia department, sleep centre, gastrointestinal surgery) 7. AZ Delta (obesity centre) 8. Maria Middelares Gent	1. Apotheek Sluizeken Gent 2. Apotheek Dok Noord Gent 3. Apotheek Korenmarkt Gent 4. Apotheek Gent Vrijdagmarkt – COOP 5. Apotheek Marlies Maeckelbergh Gent 6. S.P.R.L. Pharmacie Spitaels (Brussels) 7. Pharmacie Blyckaert (Brussels)	1. Bee Calis (Melle)

Met opmerkingen [HV152]: Alfabetisch?

Met opmerkingen [DD153R152]: Mag, moet niet, niemand die het merkt

Met opmerkingen [DD154]: Vree wijs heel gent doe mee

Appendix H: Item Intents Health Literacy Subscales

SCALE	HIGH	LOW

1. *Feeling understood and supported by healthcare providers*	Have an established relationship with at least one health provider who knows them well and who they trust to provide useful advice and information and to assist them to understand information and make decisions about their health.	People who are low on this domain are unable to engage with doctors and other healthcare providers. They don't have a regular health provider and/or have difficulty trusting health providers as a source of information and/or advice.
2. *Having sufficient information to manage my health*	Feel confident that they have all the information that they need to live with and manage their condition and to make decisions.	Feel that there are many gaps in their knowledge and that they don't have the information they need to live with and manage their health concerns.
3. *Actively managing my health*	People can recognise the importance of and are able to take responsibility for their own health. They proactively engage in their own care and make their own decisions about their health.	People with low levels don't see their health as their responsibility. They are not engaged in their healthcare and see that healthcare is something that is done to them.
4. *Social support for health*	They have a social system that provides them with all the support they want or need.	Completely alone and unsupported.
5. *Appraisal of health information*	Able to distinguish good information and resolve conflicting information by themselves or with help from others.	No matter how hard they try, they cannot understand most health information and get confused when there is conflicting information.

6. *Ability to actively engage with healthcare providers*	Proactive about their health and feels in control in relationships with healthcare providers. Is able to seek advice from additional healthcare providers when necessary. They keep going until they get what they want. Have a high degree of agency.	Passive in their approach to healthcare, inactive, i.e., they do not proactively seek or clarify information and advice and/or service options. They accept information without question. Unable to ask questions to get information or to clarify what they don't understand. They accept what is offered without seeking to ensure that it meets their needs. Unable to share concerns or get a second opinion. They feel that they have very little agency.
7. *Navigating the healthcare system*	Able to find out about services and supports so they get all their needs met. Able to advocate on their own behalf at the system and service level.	Unable to advocate on their own behalf and unable to find someone who can help them use the healthcare system to address their health needs. Do not look beyond obvious resources and have a limited understanding of what is available and what they are entitled to.
8. *Ability to find good health information*	This describes a person who is an 'information explorer'. Actively uses a diverse range of sources to find information.	Does not access required health information. Is dependent on others to offer information.

9. *Understanding health information well enough to know what to do*	Able to understand all written information (including numerical information) in relation to their health, and able to write appropriately on forms when required.	Has problems understanding any written health information or instructions about treatments or medications. Unable to read or write well enough to complete medical forms.

Note. Reprinted from *HLQ Item Intent Guide* (pp. 2, 3, 4, 6, 7, 10, 12, 14, 15), by R. Osborne, 2019. Unpublished manuscript. Copyright 2019 by Richard Osborne. Reprinted with permission.

Appendix I: Spearman's rho correlations for the nine Health Literacy Questionnaire (HLQ) Sub-scales (non-imputed dataset)

Variable	1	2	3	4	5	6	7	8	9	10	11
1. HLQ1	—										
2. HLQ2	.517**	—									
3. HLQ3	.052	.087	—								
4. HLQ4	.452**	.292**	-.045	—							
5. HLQ5	.331**	.421**	.265*	.003	—						
6. HLQ6	.514**	.384**	.172	.500**	.317**	—					
7. HLQ7	.368**	.402**	.008	.374**	.305**	.657**	—				
8. HLQ8	.341**	.433**	.127	.216	.406**	.569**	.658**	—			
9. HLQ9	.292*	.380**	.144	.070	.428**	.519**	.578**	.799**	—		
10. Self-stigma	-.326**	-.204	-.117	-.280*	-.103	-.389**	-.178	-.203	-.150	—	

Variable	1	2	3	4	5	6	7	8	9	10	11
11. PD	-.062	-.087	-.286*	-.019	-.052	-.090	-.104	.098	.052	.062	—

Note. Spearman's rho *ρ* correlations for the nine Health Literacy Questionnaire subscales, the degree of self-stigmatization experienced by participants and patient delay (PD). *$p < .05$, **$p < .01$.

Appendix J: Spearman's rho correlations for the nine Health Literacy Questionnaire (HLQ) Sub-scales (imputed dataset)

Variable	1	2	3	4	5	6	7	8	9	10	11
1. HLQ1	—										
2. HLQ2	.510**	—									
3. HLQ3	.074**	.088**	—								
4. HLQ4	.423**	.291**	-.043**	—							
5. HLQ5	.320**	.439**	.234**	-.006	—						
6. HLQ6	.526**	.418**	.151**	.502**	.308**	—					
7. HLQ7	.366**	.412**	.022	.388**	.328**	.658**	—				
8. HLQ8	.314**	.446**	.126**	.256**	.438**	.583**	.671**	—			
9. HLQ9	.274**	.371**	.174**	.121**	.445**	.536**	.596**	.798**	—		
10. Self-stigma	-.284**	-.212**	-.129**	-.264**	-.084**	-.365**	-.197**	-.207**	-.168**	—	

Variable	1	2	3	4	5	6	7	8	9	10	11
11. PD	-.121**	-.082**	-.261**	-.005	-.046**	-.110**	-.104**	.096**	.038**	.087**	—

Note. Spearman's rho *ρ* correlations for the nine Health Literacy Questionnaire subscales, the degree of self-stigmatization experienced by participants and patient delay (PD). *$p < .05$, **$p < .01$.