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## Health disparities between binary and non binary trans people: A community-driven survey

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### ABSTRACT

**Background:** Genderqueer and nonbinary (Q) people have remained largely invisible in health research. Previous research shows worse outcomes on health indicators for trans people when compared with cisgender controls, but the differences between binary trans and QGNB individuals are inconclusive.

**Aims:** To compare overall health and well-being of QGNB people with controls of trans men and trans women, taking into account the impact of the additive effect of their socio-economic position, as well as their current need for gender affirming medical interventions.

**Methods:** A community-driven survey was conducted in 2016 in five countries (Georgia, Poland, Serbia, Spain, and Sweden). Self-reported health and general well-being were analysed for differences between binary trans and QGNB respondents. The effects of multiple control variables (age, economic situation, educational level, belonging to an ethnic, religious, sexual or ability minority group, sex assigned at birth) as well as the current need for gender affirming medical interventions were controlled for.

**Results:** The sample consisted of 853 respondents aged 16 and older, with 254 trans women (29.8%), 369 trans men (43.2%), and 230 QGNB people (26%). QGNB respondents showed significantly worse self-reported health and worse general well-being in comparison to binary trans respondents. Additional negative impacts of having a lower educational level, having more economic stress, and belonging to a disability minority group were found. Being in need of gender affirming medical interventions contributed significantly to worse self-reported health, whereas being younger contributed to worse general well-being.

**Discussion:** In understanding health disparities between binary trans and QGNB people, it is necessary to take into account the additive effect of multiple socio-economic positions, and the current need for gender affirming medical interventions. The high proportion of QGNB respondents who report worse health outcomes highlights the need for policy makers and health-care providers in creating nonbinary-inclusive environments.

### KEYWORDS

Gender identity; genderqueer; health care; nonbinary; quantitative research; sociodemographic background; transgender

## Introduction

Genderqueer and nonbinary (QGNB) people are people who do not identify with the gender they were assigned at birth but identify outside the gender binary of male or female (Richards, 2017). Some gender identities that fall under the umbrella term “nonbinary gender” are genderqueer, agender, androgynous, Two-Spirit, gender nonconforming, gender variant, third gender, genderfluid, or bigender (Davidson, 2016; European Union Agency for Fundamental Rights, 2014).

Historically, gender has been assumed to be a binary concept in research (Kessler & McKenna, 1978). Much research today still focuses on differences between men and women, which implies a gender binary and reduces gender identities to (in most cases) assigned sex at birth or legal gender (Lorber, 2006; Ritz et al., 2014; Westbrook & Saperstein, 2015). Within the fields of psychology and sociology a broader understanding of gender diversity has been developed in the last century (Westbrook & Saperstein, 2015). In the last decade, research among trans people using

convenience samples have shown that the proportion of GQNB people can no longer be neglected. As an example, and in comparison with the small amount of nonbinary clients in clinical samples (Beek, Kreukels, Cohen-Kettenis, & Steensma, 2015; Scheim & Bauer, 2015), two large convenience samples show that one third of trans participants identify as nonbinary, ranging from 33% identifying as genderqueer and nonbinary in the US ( $N=6456$ ) (Grant et al., 2011) and 36% identifying as queer/other in the EU ( $N=6579$ ) (European Union Agency for Fundamental Rights, 2014). Although, these studies cannot make clear statements about the representativeness of the GQNB subsamples, very large sample sizes make it plausible that the proportionality of GQNB individuals within larger trans populations reflect to a large extent the social reality. The discrepancy between clinical and population studies may be due to the fact that GQNB people experience additional obstacles when accessing care services for gender affirming medical interventions (GAMI) (Koehler, Eyssel, & Nieder, 2018). GQNB people are often unknown to, or misunderstood by, health-care providers working with trans people, and this may result in refusing access to GAMI (Eyssel, Koehler, Dekker, Sehner, & Nieder, 2017). Another explanation could be that a smaller proportion of the GQNB population feel the need for GAMI, and/or that they tend to require a lower number of GAMI (Scheim & Bauer, 2015). The possible need of GQNB people for other treatment paths than those for trans men or trans women, remain unclear if they need to conceal their gender identity (Hage & Karim, 2000). A review of the current literature of Richards et al. (2016) showed that GQNB people keep the nonbinary concept of their gender hidden, and present themselves as a binary trans person in the hope of increasing their chance to access treatment.

Because the norm in Western societies is to view gender as a binary construct, trans binary and GQNB people challenge the categorical norms about gender and sexuality (Monro, 2003). There are no socially accepted categories for gender identities that are neither male nor female (Monro, 2003). GQNB individuals cannot rely on

social standards about clothing, communication, and representation, and as a result may not be recognized as such as others will most likely approach and label them through a binary lens. Whereas 50% of the general US population aged 18–34 years of age ( $N=1000$ ) see gender as a spectrum (Benenson Strategy Group, 2015), Flemish representative population research indicates that gender is still highly important in everyday interactions and 60% of people consider it (very) important to know whether someone is a man or a woman at first contact (Noppe, 2016). That this process occurs, has been described by various people with a non-normative gender identity in different autoethnographic reports (see Lucal, 1999; Nordmarken, 2014).

The social impact on a person because of their belonging to a minority group related to sex and/or gender may lead to minority stress (Meyer, 1995, 2003). The minority stress model suggests that poor physical and/or mental health of sexual minorities can, to a large extent, be explained by stress factors caused by a hostile lesbian, homosexual, and bisexual (LGB) phobic culture, often resulting in persistent bullying, discrimination, and victimization (Dentato, 2012; Marshal et al., 2008; Meyer, 2003; Murad et al., 2010). While the minority stress model was developed with regards to LGB people, research has shown that trans people suffer from gender minority stressors too (Testa, Habarth, Peta, Balsam, & Bockting, 2015; Testa et al., 2017). In accordance with the minority stress model, trans people often report hostile and confusing reactions from others in everyday situations. These negative reactions are particularly paramount when being open about one's gender identity (Davidson, 2016; European Union Agency for Fundamental Rights, 2014). In line with the model of "gender minority stress," Testa et al. (2017) found that rejection, nonaffirmation, and victimization were related to suicidal ideation through experiences of internalized transphobia and negative expectations.

Findings regarding the effects of openness about one's gender identity on negative experiences also differ according to other socio-economic positions. For example, Davidson's study (2016) showed that openness about one's gender identity increases the chance of unemployment for GQNB

people assigned male at birth, while reducing the chance of unemployment for GQNB people assigned female at birth ( $p < .05$ , odds ratio for female\*outness = 0.58). GQNB people of color report far more negative outcomes than white GQNB people, with black and mixed race GQNB people experiencing an additional racial bias (Davidson, 2016). For example, the odds ratio of being unemployed for black people compared to white people is 1.99 ( $p < 0.1$ ), for having lost a job 2.18 ( $p < .05$ ), and for having been removed from direct contact with costumers, clients, or patients 2.51 ( $p < .001$ ). These findings suggests that an intersectional lens is required in trans research; one that pays attention to the interconnected nature of social categorizations such as race, gender, and class (Crenshaw, 1991). Indeed, it is the intersection of these socio-economic positions that will determine (among other things) a person's health, and thus an intersectional analysis assists in the capturing of nuance where multiple forms of oppression meet and mix (Vincent, 2018).

Research has shown that the reported mental health of transgender people is worse than cisgender populations (Budge, Adelson, & Howard, 2013; McNeil, Bailey, Ellis, Morton, & Regan, 2012; Motmans, Meier, Ponnet, & T'Sjoen, 2012; Warren, Smalley, & Barefoot, 2016). However, results concerning the mental health differences between binary trans and nonbinary subgroups are inconclusive. Some US survey research shows a significant poorer mental health for GQNB respondents ( $N = 5956$ ) (Harrison, Grant, & Herman, 2012), whereas other US survey research shows worse mental health outcomes for the binary trans respondents ( $N = 2932$ ) (Warren et al., 2016). These studies point to the same conclusion, that although it is clear that the mental health outcomes for binary trans and GQNB people are worse than their cisgender counterparts, it remains unclear which factors contribute to mental health disparities within the larger binary trans and GQNB populations.

This article aims to contribute to the quantitative research of self-reported health of GQNB people by analyzing indicators of overall health and well-being in GQNB people, with controls of binary trans people (trans men and trans

women). Socio-economic positions which are important elements in explaining health outcomes are taken into account, such as age, sex assigned at birth, educational level, economic position, and different minority statuses. Furthermore, the specific needs of trans people for GAMI is taken into account. Based on the literature, it is hypothesized that GQNB people will significantly score differently on health outcome measures, even when taking into account several other socio-economic positions, and their need for GAMI. Because the literature is not clear about differences in (dis)advantages between people with a GQNB identity or a binary trans identity, no predictions will be made about which group will report more disadvantages.

## Materials and methods

### Study population and procedure

Based on previous country-based community-driven research as well as a literature review, an English questionnaire was co-created by the research group consisting of trans organizations from Georgia, Poland, Serbia, Spain, and Sweden, together with the last author, a social scientist. The five countries were chosen due to their geographical and cultural disparities. The questionnaire consisted of open and closed questions, and not all questions were obligatory, resulting in different response rates per question. Existing and validated measurement tools were used for selected topics of interest where possible. The final questionnaire was translated into five other languages by native speakers (Georgian, Polish, Serbian, Spanish, and Swedish), and tested by volunteers in the respective countries. Six surveys were hosted on an online survey platform SurveyMonkey, including one in English and were accessible between September 2016 and November 2016.

Self-identified trans people aged 16 years and older living in Georgia, Poland, Serbia, Spain, or Sweden were invited to complete the anonymous survey. Snowball sampling was used to reach out to respondents. Trans-led organizations recruited participants in their respective languages via social media (specifically via links placed in closed Facebook groups and on Facebook pages

of trans organizations), through announcements on relevant listservs, as well as throughout their activities.

### Main outcome measures

Participants were asked a number of demographic questions. Age was recoded asking for birth year. The *highest obtained educational level* was measured using the International Standard Classification of Education (ISCED) (UNESCO Institute for Statistics, OECD, & Eurostat, 2015), with ISCED 1 “no formal education,” ISCED 2 “primary education,” ISCED 3 “secondary education,” ISCED 4 “post-secondary education other than college/university,” and ISCED 5 “college/university/higher academic education.”

The economic situation was measured with a question about how easily the respondents were able to make ends meet (indicator for *economic stress*): “A household may have different sources of income and more than one household member may contribute to it. Thinking of your household’s total monthly income: is your household able to make ends meet?” Answers ranged on a six-point scale from “very easily” (1) to “with great difficulty” (6), with higher scores indicating more economic stress. The question originates from the European Quality of Life Survey 2012 (European Foundation for the Improvement of Living and Working Conditions, 2012) and was originally available in Polish, Spanish, English, and Swedish.

*Belonging to different minority groups* was measured with a question where the respondents had to indicate whether they felt to belong to a minority group (“No, I don’t belong to this group,” “Yes, but it is not important at all to me,” “Yes, but it’s only slightly important to me,” and “Yes, and it’s very important to me”). The listed minority groups were: ethnic minority, religious minority, sexual minority (gay, lesbian, bisexual, queer, asexual, etc.), and minority due to ability status). For each minority group respondents were recoded into a binary variable indicating whether or not they felt they belong to this specific minority group (0 = No, 1 = Yes). The difference in the evaluation of the importance of belonging to a minority group was not used due to small sample sizes ( $n < 5$ ).

*Sex assigned at birth* (SAAB) was measured with one question asking respondents for their sex assigned at birth, with the explanation that we meant their sex on their initial birth certificate (Female/Male) (as no other legal options existed in the countries under study). All respondents were asked how they would describe their *gender identity* at the current moment, and were offered a list of possibilities for self-identification from which they were asked to select only one option that fits them best: Female, Male, Transfeminine/Trans woman/Male-to-female (MTF), Transmasculine/Trans Man/Female-to-male (FTM), Nonbinary/Genderqueer/Gender nonconforming and Other (please specify). If their SAAB was male, and the gender identity was either Female or Transfeminine/Trans woman/Male-to-female (MTF), the respondent was recoded into trans woman. If their SAAB was female, and the gender identity was either Male or Transmasculine/Trans Man/Female-to-male (FTM), the respondent was recoded into trans man. Respondents who identified as Nonbinary/Genderqueer/Gender nonconforming were recoded into GQNB people, regardless of their SAAB. The open answers of those respondents who indicated to have an “other” gender identity were screened by the research group, and recoded into trans man, trans woman, or GQNB.

When measuring health-related outcomes, assessing *the current need of Gender Affirming Medical Interventions* (GAMI) is important. Respondents were first asked if they had ever sought psychological or medical help for being trans (Yes/No). Those who answered “No” could indicate why not, and one of the arguments listed was “I do not want/need help.” Those who answered “Yes” could indicate on a long list of possible transition-related interventions what type of GAMI they had already undergone. This question also offered the respondent the possibility to indicate for each listed treatment option that they “Might consider/am planning to” or “I would like to/would have liked to, but it is/was not available.” Based on these two questions, a new variable was constructed: “in need of GAMI” (Yes/No). The first group (“in need for GAMI: Yes”) contained all respondents who had not sought psychological or medical help for being trans, and who did not



indicate that they do not want/need help. Also, all respondents who did get some form of GAMI but still indicated that they might consider, are planning, or would like some further type of GAMI, were recoded as “In need of GAMI: Yes.” All respondents who stated that they had never sought psychological or medical help for being trans because they do not want/need help, were grouped together with those respondents who did undergo certain interventions, but had no other plans or wishes for further GAMI. This group was considered not to be in (any further) need of GAMI (“in need of GAMI: No”).

*Self-reported health* (SRH) was measured by asking respondents to evaluate their own general health on a five-point Likert scale, ranging from very good (1) to very poor (5). The question originates from the European Quality of Life Survey 2012 (Q58, European Foundation for the Improvement of Living and Working Conditions, 2012) and was originally available in Polish, Spanish, English, and Swedish. Higher scores represent worse subjective health.

*General well-being* was measured using the WHO-5 index (Regional Office for Europe WHO, 1998). This scale was available in Polish, Spanish, English, Swedish, and Georgian. The WHO-5 index is calculated from the overall average score from responses to five statements: “I have felt cheerful and in good spirits,” “I have felt calm and relaxed,” “I have felt active and vigorous,” “I woke up feeling fresh and rested,” and “My daily life has been filled with things that interest me.” Each statement consisted of a five-point Likert scale, ranging from “At no time” (0) to “All of the time” (5). Higher scores represent better general well-being. The proportion of people “at risk of poor mental health” is used as an indicator of mental health and is defined as having a WHO-5 index of 50 or below. A score lower than 28 can be defined as “likely depression” and a score between 29 and 50 as “a low mood” (Regional Office for Europe WHO, 1998).

### Statistical analysis

Since the study is one of the first analyses of health differences between the two groups, the choice was made to include a large number of control variables in the study in order to see any influences. Due to

the small sample sizes in Georgia and Serbia and even smaller samples when divided in the gender identity groups within each country, the country of residence could not be taken into account as a control variable.

Data analysis was performed using SPSS for Windows, v24 (IBM Corp, 2016). Where the dependent variable was continuous, but not normally distributed, Mann–Whitney *U* tests were used to compare differences between binary and GQNB trans respondents. When categorical, Chi-square tests were used. To explore differences in health-related outcome measures between GQNB people and binary trans people, a series of ANCOVAs were conducted to control for the effects of age, economic stress, educational level, belonging to an ethnic, religious, sexual or ability minority group, sex assigned at birth and the need for GAMI. A *p* value of  $<.05$  was considered to be statistically significant. Only significant *p*-values will be reported in this article.

To test the expectation of significant differences in health-related outcomes between binary and GQNB trans people when controlling for different socio-economic variables, regression analysis was applied, attempting to obtain the best model by using a backward regression analysis method. Significant effects of background variables for the health-related outcome measures were taken together in one model. A backward stepwise selection procedure was applied to the model with all significant main effects. Stepwise selection indicates variables with a statistically significant effect, simultaneously adjusting for the other variables in the regression model (Steyerberg, Eijkemans, & Habbema, 1999). To avoid the problems associated with automatic variable selection procedures with the stepwise approach (Núñez, Steyerberg, & Núñez, 2011), the backward stepwise selection was applied manually. Variation inflation factors were calculated for each of the variables included in the models, and were of no concern ( $VIF < 2$ ).

## Results

### Response

The data-cleaning excluded respondents who did not give their consent, who were not living in the

five countries under study or who had not lived there in the 24 months preceding the survey, those who took less than 10 min to fill in the long questionnaire and those who indicated to be intersex and not trans (Smiley et al., 2017). Furthermore, if the self-described gender identity could not be understood in male, female, or non-binary terms, the respondent was not retained in the current data analysis due to this lack of clarity ( $n=32$ ). After data cleaning, the data contained answers from  $N=853$  respondents aged 16 and older and residing in the five countries in the 24 months preceding the data collection. Of the five countries, 21 participants lived in Georgia ( $n=6$  GQNB participants), 74 in Poland ( $n=11$  GQNB participants), 36 in Serbia ( $n=6$  GQNB participants), 272 in Spain ( $n=35$  GQNB participants), and 450 in Sweden ( $n=172$  GQNB participants). In total, the sample consisted of 254 trans women (29.8%), 369 trans men (43.2%), and 230 GQNB respondents (26.9%). For the analysis, trans women and trans men were grouped into one category of binary trans respondents and compared with GQNB respondents. Of the majority of the 853 respondents, 65.5% ( $n=559$ ) were assigned female at birth (AFAB) and 34.5% ( $n=294$ ) were assigned male at birth (AMAB). Within the group of GQNB respondents, 82.6% ( $n=190$ ) was AFAB, and 17.4% ( $n=40$ ) AMAB.

### Demographic variables

Respondents' socio-economic characteristics are summarized in Table 1.

GQNB respondents were significantly younger; reported significantly less often economic stress; belonged significantly more often to a religious, sexual, and/or minority to ability status; and indicated significantly less often to be in need for (further) GAMI when compared with binary trans respondents (see table for details).

### Self-reported health

In terms of health, GQNB respondents ( $M=2.86$ ,  $SD=.07$ ) reported a significantly worse self-reported health status in comparison to the

binary trans respondents ( $M=2.34$ ,  $SD=.04$ ) ( $F(1,853)=45.35$ ,  $p<.001$ ).

Taking into account the aforementioned differences in socio-economic characteristics of the two identity groups (see Table 1), this health disparity was further analyzed for the total sample. First, two-way ANCOVAs were performed, with identity group and the control variables (more specifically sex assigned at birth; age; educational level; economic stress; belonging to an ethnic, religious, sexual or ability minority group; and in need for GAMI) as independent variables. Significant main effects were found for age ( $F(1,849)=4.48$ ,  $p=.035$ ), with older respondents showing a better self-reported health than younger respondents.

Furthermore, a lower educational level ( $F(1,849)=39.46$ ,  $p<.001$ ), more economic stress ( $F(1,741)=40.47$ ,  $p<.001$ ), and belonging to an ethnic ( $F(1,716)=4.84$ ,  $p=.028$ ), religious ( $F(1,722)=7.31$ ,  $p=.007$ ), sexual ( $F(1,729)=4.17$ ,  $p=.042$ ), and/or an ability minority ( $F(1,721)=78.82$ ,  $p<.001$ ) was significantly related to worse self-reported health in both identity groups. Respondents who (still) are in a need for GAMI, showed worse self-reported health when compared to those who are not seeking GAMI (any longer) ( $F(1,716)=9.304$ ,  $p=.002$ ).

Using a stepwise selection procedure, all significant effects were taken together in one model (see Table 2). The first model enters all candidate variables. Within each step, variables with a  $p>0.5$  were excluded. The fifth model is chosen as the best model. GQNB respondents continued to show a significantly worse self-reported health in comparison to the trans binary respondents ( $F(1,717)=30.37$ ,  $p<.001$ ). Furthermore, respondents with a lower educational level ( $F(1,717)=18.01$ ,  $p<.001$ ), with more economic stress ( $F(1,717)=31.95$ ,  $p<.001$ ), with a disability ( $F(1,717)=68.23$ ,  $p<.001$ ), and/or with a need for GAMI ( $F(1,717)=4.42$ ,  $p=.036$ ), reported a significantly worse self-reported health.

### General well-being

In total, 57.5% scored lower than 50 and thus are at risk of poor mental health according to the WHO-5 norms (Regional Office for Europe

**Table 1.** Socio-economic characteristics of binary trans and GQNB respondents.

	Binary trans			GQNB			
	Trans women (AMAB)	Trans men (AFAB)	Total	AMAB	AFAB	Total	
Age (years) ( <i>M</i> , <i>SD</i> )	31.0 (12.24)	24.5 (7.58)	27.1 (10.25)	27.7 (11.63)	24.1 (7.08)	24.7 (8.15)	$p = .004$ $p < .001$ $p = .601$ $p = .053$
Educational level ( <i>M</i> , <i>SD</i> )	3.72 (1.00)	3.67 (1.09)	3.69 (1.05)	3.88 (1.20)	3.45 (1.13)	3.53 (1.15)	$p = .649$ $p = .032$ $p = .038$
Educational level condensed (%)							
Low			13.6			20.4	
Middle			55.7			48.7	
High			30.7			30.9	
Economic stress ( <i>M</i> , <i>SD</i> )	3.40 (1.47)	3.31 (1.34)	3.35 (1.39)	2.97 (1.23)	3.02 (1.35)	3.01 (1.33)	$p = .002$ $p = .523$ $p = .828$ $p = .007$
Economic stress condensed (%)							
(very) Easily			28.7			37	
Fairly easily/some difficulty			51.0			51.4	
With (great) difficulty			20.3			11.5	
Minority group (% belonging to)							
Ethnic minority	7	8.7	8	11.4	11.1	11.2	$p = .174$ $p = .478$ $p = .957$ $p = .010$ $p = .469$ $p = .195$ $p < .001$ $p = .087$ $p = .037$ $p = .011$
Religious minority	10.1	8.3	9	22.9	14.1	15.6	$p = .532$ $p = .210$ $p < .001$
Sexual minority	72.0	78.5	75.8	86.1	95.3	93.8	$p = .851$ $p = .292$
Minority due to ability status	23.3	25.7	24.7	25	35.9	34	
In need of GAMI (% Yes)	88.5	88	88.2			74.1	
					67.5	75.5	

Notes: *N* differs for the different variables due to the fact that not all questions were required to answer. Percentages do not always add up to 100 due to rounding. To compare the educational level between binary trans and GQNB respondents in more detail, the continuous variable was recoded for this table into a dichotomous variable as well with ISCED codes 1 and 2 recoded as "low educational level," ISCED 3 and 4 as "middle educational level," and ISCED code 5 into "high educational level." To compare the economic stress between binary trans and GQNB respondents in more detail, economic stress was recoded in a dichotomous variable with the two highest items combined into one item ("(very) easily") and the two lowest items ("with (great) difficulty").

**Table 2.** Regression analysis for self-reported health (standardized regression coefficients).

variables	Models				
	1	2	3	4	5
Binary gender identity group	-.40***	-.40***	-.39***	-.40***	-.42***
Ethnic minority (no)	-.11	-.13	-.13	/	/
Religious minority (no)	0.12	/	/	/	/
Sexual minority (no)	.09*	-.18*	-.18*	-.17	/
Minority due to ability status (no)	-.59***	-.60***	-.60***	-.61***	-.63***
In need of GAMI (no)	0.1*	-.21*	-.20*	-.21*	-.20*
Age	.003	.003	/	/	/
Educational level	-.14***	-.14***	-.13***	-.13***	-.13***
Economic stress	0.14***	0.14***	0.14***	0.14***	0.14***
Adjusted $R^2$	0.15	0.15	0.15	0.15	0.15

Notes: \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .



WHO, 1998). GQNB respondents had significantly lower scores ( $M = 38.6$ ,  $SD = 20.88$ ) than the binary trans respondents ( $M = 48.0$ ,  $SD = 23.16$ ;  $F(1,850) = 29.06$ ,  $p < .001$ ).

Firstly, two-way ANCOVAs were performed, with gender identity group and the control variables (more specifically sex assigned at birth, age, educational level, economic stress, belonging to an ethnic, religious, sexual or ability minority group and in need for GAMI) as independent variables. In contrast with self-reported health, a significant difference was found for SAAB ( $F(1,848) = 7.31$ ,  $p = .007$ ), with respondents assigned male at birth (AMAB) scoring better than those assigned female at birth (AFAB). Furthermore, being younger ( $F(1,848) = 31.09$ ,  $p < .001$ ), having a lower educational level ( $F(1,848) = 31.09$ ,  $p < .001$ ), having more economic stress ( $F(1,741) = 34.42$ ,  $p < .001$ ), and belonging to an ethnic ( $F(1,716) = 6.23$ ,  $p = .013$ ), a religious ( $F(1,722) = 4.41$ ,  $p = .036$ ) and/or an ability minority group ( $F(1,721) = 19.52$ ,  $p < .001$ ), was significantly related to worse general well-being. Respondents who are (still) in need of GAMI score worse on general well-being, when compared to those who are not seeking GAMI (any longer) ( $F(1,844) = 11.42$ ,  $p = .001$ ).

Again, all significant effects were taken together in one model (see Table 3) with the first model entering all candidate variables, and within each step, variables with a  $p > 0.5$  were excluded. The fifth model shows the best fit. GQNB respondents continued to show a significantly worse general well-being in comparison to the binary trans respondents ( $F(1,717) = 17.66$ ,  $p < .001$ ). Furthermore, respondents who were younger ( $F(1,717) = 21.47$ ,  $p < .001$ ), with a lower

educational level ( $F(1,717) = 7.40$ ,  $p = .007$ ), with more economic stress ( $F(1,717) = 27.93$ ,  $p < .001$ ), and/or those with a disability ( $F(1,717) = 20.01$ ,  $p < .001$ ), reported a significantly worse general well-being.

## Discussion and conclusion

The present study depicts an initial scoping of the health of GQNB trans people when compared with trans men and trans women, taking into account the impact of several socio-economic positions, as well as their current need for GAMI. In our sample, 26.9% of the respondents identified with a GQNB identity which is a slightly lower percentage than reported in the large convenience samples in the United States (Grant et al., 2011) and in Europe (Davidson, 2016; European Union Agency for Fundamental Rights, 2014).

Based on the results, the hypothesis suggesting a significant difference between binary trans and GQNB trans respondents on different health-related outcomes, when controlled for other socio-economic positions and their current need for GAMI, was confirmed. GQNB respondents reported significantly worse self-rated health and significantly worse general well-being in comparison to binary trans respondents (trans men and trans women). Additional negative influences of having a lower educational level, having more economic stress, and belonging to an ability minority group were found for both self-reported health and general well-being. Being in need of GAMI contributed significantly to a worse self-reported health, whereas being younger contributed to a worse general well-being.

**Table 3.** Regression analysis for general well-being (standardized regression coefficients).

variables	Models				
	1	2	3	4	5
Binary gender identity group	8.02***	7.97***	8.24***	8.08***	7.41***
AFAB	-1.34	-1.36	/	/	/
Ethnic minority (no)	4.71	4.57	4.63	/	/
Religious minority (no)	-.69	/	/	/	/
Minority due to ability status (no)	7.41***	7.34***	7.41***	7.86***	7.92***
In need of GAMI (no)	4.24	4.23	4.18	4.25	/
Age	0.38***	0.37***	0.40***	0.39***	0.40***
Educational level	2.01*	2.01*	1.97*	2.09**	2.14**
Economic stress	-3.03***	-3.01***	-3.00***	-3.04***	-3.05***
Adjusted $R^2$	0.15	0.15	0.15	0.15	0.15

Notes: \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

With regard to previous research on the health status of binary trans and GQNB trans people, the findings are in accordance with Harrison et al. (2012) where GQNB trans people reported significant poorer health than trans men and trans women. In line with previously conducted research (Davidson, 2016), this relationship is further moderated by other variables, pointing at the intersections of several socio-economic positions, and the difficulty in unraveling them separately in the analyses.

The minority stress model suggests that poor physical and/or mental health can be explained by stress factors caused by a phobic culture (Marshall et al., 2008; Meyer, 2003; Murad et al., 2010). This could explain why gender minority groups report worse health than their cisgender counterparts, and maybe even why GQNB trans individuals who cross gender binary norms report worse health outcomes than trans women and trans men. Previous research on everyday negative experiences, violence, and discrimination showed higher frequencies in these experiences reported by nonbinary samples when compared to trans women and trans men (Davidson, 2016; European Union Agency for Fundamental Rights, 2014), which could explain the additional minority stress experienced by GQNB trans people.

As to limitations and strengths of this study, a limitation is that this study may have produced data that is skewed due to the sampling strategy. The survey was distributed through relevant listservs, which could explain why the majority of respondents were young, AFAB, and highly educated. Research shows that trans people who feel connected to and participate in trans organizations are mostly young, AFAB and highly educated (Missiaen & Seynaeve, 2016; Motmans, Wyverkens, & Defreyne, 2018). Individuals who live in rural areas or who tend not to be in contact with trans-identified places or organizations may not have been reached. Furthermore, the data gathering was online, so respondents were expected to have digital literacy. Another limitation within the entire study concerns the total respondents per country, with low response rates in Georgia ( $n = 21$ ) and Serbia ( $n = 36$ ), making comparisons across countries impossible. Lastly, the construction of gender identity groups was

based on a limited list of gender identity labels and sex assigned at birth. Respondents were categorized by the researchers into a dichotomous variable (binary or nonbinary) which can limit the individual's lived experience of their gender.

However, we believe this research contributes to the small field of research analyzing health disparities between binary trans and GQNB trans people. We were able to differentiate between the possible influences of background characteristics such as sex assigned at birth; age; educational level; economic situation; belonging to an ethnic, religious, sexual or ability minority group; and the current need for GAMI. Future research with larger samples may extend the generalisability of the findings reported here by capturing a holistic picture of binary trans and GQNB trans individuals and by including measures of value that were not included in this analysis. Our analysis was limited to interactions between socio-economic positions with gender identity groups, and did not delve into the intersectional analysis of interactions between background variables (Bauer, 2014), such as the impact on health when one belongs to several minority groups.

Another strength lies in the collaboration between different countries. The involvement of trans organizations in the five countries in the co-creation of the research project yielded specific information relevant for all participating groups. The organizers took into account the socio-legal specificities of their countries' respective situations, previous research in their countries, as well as their needs for specific topics to be included in the data gathering (Smiley et al., 2017). Through this collaboration, a large enough sample of binary trans as well as GQNB respondents could be collected, as well as enough respondents belonging to an ethnic, religious, sexual, and/or ability minority group.

In conclusion, the findings provide an initial mapping of health indicators of GQNB and binary identified trans individuals from five European countries. The results of this study can contribute to more awareness on the proportion of GQNB trans people in these countries, and shed a light on their vulnerable health status. The findings are especially salient given the growing

visibility of GQNB trans individuals (Hage & Karim, 2000; Nieder & Richter-Appelt, 2011).

The high proportion of GQNB respondents who report poor health and low scores on general well-being, highlights the need for policy makers and health-care providers in creating nonbinary-inclusive environments, which are at the same time sensible to issues of class, (dis)ability, ethnicity, sexuality, and religion. Efforts must be made to ensure providers' cultural and clinical competences to care for GQNB and binary trans people, to increase the possibility for trans people to freely disclose their gender identity, to enable their access to GAMI when needed, and, ultimately to improve their overall health.

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### Declaration of conflict of interest

The authors declare that they have no conflict of interest.

### Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No specific ethical approval was applied for since general ethical research principles in data gathering and data storage were followed, according to the Belgian law regarding experiments on humans (Wet inzake experimenten op de menselijke persoon). Potential participants were informed about the topics of the survey, the aim of the survey and the parties involved in the data gathering and analytical process, and had to give their explicit consent before they were able to proceed with the online survey.

### Informed consent

Informed consent was obtained from all individual participants included in the study.

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