Eating disorder risk in transgender youth and its association with unmet need for gender-affirming hormone therapy in Aotearoa New Zealand: a cross-sectional study

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ABSTRACT

AIM: This study aimed to estimate rates and factors associated with eating disorder risk in transgender youth, and to explore the association between this risk and unmet need for gender-affirming hormone therapy (GAHT).

METHODS: In a national cross-sectional survey of participants aged 14–24 years, the five-item Sick, Control, One stone, Fat, Food (SCOFF) instrument was used to assess eating disorder risk. GAHT demand was self-reported. Modified Poisson regressions were employed to assess risk.

RESULTS: Overall, 1,401 participants were eligible, of whom 1,010 (72.1%) had valid SCOFF scores. Of these, 398 (38.4%) participants met the threshold for eating disorder risk. In adjusted analyses, those aged 14–18 years had an increased prevalence ratio (PR) of eating disorder risk compared with their counterparts aged 19–24 years (PR: 1.26; 95% confidence interval: 1.06–1.50). GAHT demand was reported by 645 participants, with 277 (42.9%) having unmet need. No statistical evidence was found relating unmet GAHT need with eating disorder risk (p=0.29).

CONCLUSION: Nearly two in five transgender youth are at eating disorder risk, and unmet GAHT need rates appear higher. While it is recognised that eating disorders are a global health concern, they have not received the priority they deserve. In the calls for urgent action, transgender youth deserve particular attention.

Eating disorders are of increasing public health interest within Aotearoa New Zealand and across the globe, having potentially profound and devastating impacts on individuals, their families and whānau, and society.[1–3] They are illnesses characterised by severe and persistent disturbances in eating behaviours with impairment to physical and psychological functioning.[4] Aotearoa New Zealand national specialist mental health service data show that an increasing proportion of the population are being diagnosed with eating disorders, with a notable rise in the number of young people presenting and at an earlier age of onset.[5] Research of the general Aotearoa New Zealand population estimates a lifetime prevalence of 0.6% for anorexia nervosa, 1.0–1.3% for bulimia nervosa and 1.9% for binge-eating disorders.[6,7] However, a systemic lack of routine screening for these conditions in the health system is thought to contribute to an underdiagnosis and treatment of these illnesses in the general population.[8]

Transgender youth have historically been under-represented and under-reported in population health research,[9] including investigating eating disorders.[10] This under-representation has led to gaps in understanding their specific health needs and experiences.[11] Increased societal awareness, improved access to information and resources and improved data collection efforts have contributed to the increase in youth identifying as transgender over the past decade.[12] These factors are also likely to underpin the increase in transgender youth seeking gender-affirming care,[13] although many remain under-served by the public health system.[14] Research internationally has found that transgender youth experience higher levels of disordered eating and eating disorders than their cisgender peers.[15,16] However, Aotearoa New Zealand's national eating disorder statistics cannot be disaggregated for transgender populations, and there has been a dearth of data for these groups across a range of official socio-economic and health statistics more generally. Nonetheless, there is an emerging body

of research and data related to transgender people in Aotearoa New Zealand that demonstrates they experience higher levels of unmet need for healthcare and an array of inequitable health outcomes relative to the general population.[17,18]

Screening for eating disorders is of critical importance in public health because early detection of and intervention for these illnesses can improve prognosis and increase the likelihood of recovery.[8] However, eating disorder screening and treatment approaches have been found lacking in their suitability and responsiveness for transgender people, potentially worsening the already increased risk of inequitable health outcomes for this population.[16,19]

Gender dysphoria and body dissatisfaction are commonly experienced by transgender people, and these can be exacerbated during puberty due to the development of secondary sex characteristics (e.g., breast development, facial hair) that may not align with their sense of self.[20] "Gender-affirming care" refers to any social, psychological, behavioural and medical intervention treatments transgender people may undergo to affirm their gender.[21] Gender-affirming hormone therapy (GAHT) is an important aspect of healthcare for many transgender people, and there has been an increase in the demand for GAHT observed in Aotearoa New Zealand over the last decade.[13] It is the only medical intervention that trans young people in Aotearoa New Zealand may also be able to access. Gender-affirming healthcare can alleviate experiences of gender dysphoria,[22] and there is some evidence that GAHT can act as a protective factor for eating disorders in transgender adults by alleviating eating disorder symptomology and body image disturbances.[23] Our literature review found scant published research on this topic within the Aotearoa New Zealand context, with most insights provided by two Counting Ourselves surveys—nationwide community-based studies of the health and wellbeing of transgender people in Aotearoa New Zealand—and associated community reports (see: https://countingourselves.nz/).[24,25] The 2018 survey found that transgender youth reported high levels of binge-eating and weight-control behaviours, with 55% reporting they have fasted or skipped meals and 18% vomiting or throwing up to lose weight.[24] This first survey did not include the Sick, Control, One stone, Fat, Food (SCOFF) measure for detecting eating disorder risk.

This study was designed to redress the empirical evidence deficit, which is of particular concern given the relevance of eating disorders for public health in Aotearoa New Zealand, the international evidence of heightened risk of eating disorders in transgender people and the lack of research relating these factors within the Aotearoa New Zealand context. The rise in youth identifying as transgender with high levels of unmet healthcare needs in Aotearoa New Zealand provides a further impetus for this study. Using the 2022 Counting Ourselves survey, the aim of this study is to estimate rates and factors associated with eating disorder risk in transgender youth. A secondary aim is to explore the association between eating disorder risk and unmet need for GAHT in transgender youth.

Methods

Study design

The Counting Ourselves survey is a repeated, non-randomised, national cross-sectional survey. This study utilised measurement wave two, which surveyed participants between 1 September and 14 December 2022. Measurement wave one did not include the eating disorder risk instrument.

Participants

Participants of the Counting Ourselves survey include transgender and non-binary people aged 14 years old and over living in Aotearoa New Zealand. Aligned with the World Health Organization's definition of youth, for the purpose of this study participants aged 14–24 years were included.

Procedure

The Counting Ourselves survey was community-led and employed a range of recruitment strategies designed to ensure high target participant reach and coverage. These recruitment strategies included: building relationships with transgender community groups; connecting with networks of health professionals and academic researchers interested in transgender health; and inviting community leaders from Māori, Pacific, Asian and disability groups to share information about the survey through their networks and platforms. Participants could respond online (via Qualtrics) or on paper versions of the survey. The majority (99%) responded online. Both modes included an information sheet with details about the study and how their information would be used and kept confidential. Responses to questions within the survey were not compulsory, meaning that some items (including SCOFF instrument items) could be skipped by participants. All data were uploaded

to a secure electronic database. Detailed information about the study, utilised instruments and procedures are described elsewhere in the Counting Ourselves community report.[25]

Primary measures

Eating disorder risk was assessed using the five-item SCOFF instrument.[26] This screening tool elicits five questions, with dichotomous "yes(1)/no(0)" response options, which are then summed over all five items. A summed score ≥2 indicates a likely case of anorexia nervosa or bulimia nervosa. Thus, for this paper, we defined eating disorder risk as indicated if the summed SCOFF score ≥2. If one or more SCOFF instrument items were missing, then eating disorder risk was also set to missing. The SCOFF is increasingly employed in research and clinical settings due to its simple structure and brevity.[27] Pooled estimates in a meta-analysis of the SCOFF's diagnostic accuracy found it had good sensitivity (0.80) and specificity (0.93).[28] One study was identified that validated the SCOFF as an effective tool for eating disorder screening in transgender youth.[29]

GAHT demand was determined through a question that asked respondents "*Have you had, or do you want, gender affirming hormones, including estrogen, testosterone, or anti-androgens?*", with response options: 1) "*Yes, I am taking hormones or have taken hormones*", 2) "*I want to take hormones, but I have not been able to yet*", 3) "*I am not sure if I want to take hormones*", and 4) "*I do not want to take hormones*". For the purpose of this study, GAHT demand was defined by those responding affirmatively to response options 1 or 2, with 1 characterising met need and 2 unmet need.

Socio-demographic and potentially confounding variables

Participants were asked to categorise their gender as one of three options, prefaced with a statement that recognised the limited options and the utility of the broad categorisations for analytical purposes. Gender categories included: "trans woman, woman, or girl", "trans man, man, or boy" and "non-binary, genderqueer, agender, or similar identity". Ethnicity information was collected allowing for multiple identifications. For those with multiple identifications, a prioritised ethnicity was assigned based on the order: Māori, Pacific, Asian, and Pākehā/New Zealand European and other European (abbreviated to "European/Other" thereinafter). All other ethnicities were combined into an "Other" group due to the small number of responses across a diverse range of these ethnicities (consistent with the Counting Ourselves community report methodology). As this "Other" group remained small, it was combined with the European ethnic group and, to aid exposition, was labelled as European/Other. Living description was determined by asking participants whether they lived in: 1) a major city, 2) a large city, 3) a medium-sized town or city, or 4) a small town or rural area. Examples were provided for each. A dichotomous variable was created, defined by "major/large city" (combining 1 and 2 responses) and "living elsewhere" (combining 3 and 4 responses) values.

Statistical analysis

Reporting of this study was informed by the STrengthening the Reporting of OBservational studies in Epidemiology (STROBE) guidelines.[30] Participant flow, socio-demographic characteristics and primary variables were described with frequency analysis. All bivariable comparisons of categorical variables used Fisher's exact test. Complete case modified Poisson regression models, with robust variance estimators, were used to relate eating disorder risk to socio-demographic characteristics and GAHT demand. Prevalence ratios (PRs) and associated 95% confidence intervals (CIs) were derived. Both unadjusted and adjusted models were employed. Sensitivity analyses were then conducted for the primary aim, using chained equations multiple imputation (M=50) methods for all variables represented within the adjusted model. In these sensitivity analyses, the participants with invalid summed SCOFF scores were included to account for the difference in their socio-demographic characteristics when compared with those with valid summed SCOFF scores. All analyses were conducted in Stata SE version 18.0 (StataCorp, College Station, TX). A two-tailed $\alpha=0.05$ defined significance.

Ethics

Ethical approval was obtained from the New Zealand Health and Disability Ethics Committee (HDEC; approval number: 2022 FULL 12683). All methods were performed in accordance with HDEC's relevant guidelines and regulations.

Results

Participants

The Counting Ourselves study at measurement wave two included 2,631 participants, with an age

range of 14–86 years. Of these, 1,230 (47%) participants were aged over 24 years and were excluded, leaving 1,401 within the analytical sample. A participant flow diagram appears in Appendix Figure 1.

Socio-demographic characteristics

Sample characteristics are presented Table 1. Just under half of participants were aged 14–18 years old; most participants' gender was non-binary, genderqueer, agender or a similar identity; European/Other ethnicity identification predominated; and the majority resided in a large city. Of the 1,070 participants defined as European/Other, 1,046 (97.8%) were European—an overwhelming majority.

SCOFF measures

Table 1 also presents the distribution of valid summed SCOFF scores by socio-demographic characteristics. Significant differences emerged across all reported characteristics, with those aged 14–18 years, non-binary, genderqueer, agender or similar identity, Pacific, and those residing outside major/large city all more likely to have missing SCOFF scores.

Appendix Table 1 provides the valid response distribution to the individual items of the SCOFF instrument, together with the overall SCOFF disordered eating threshold measure. Overall,

Table 1: Socio-demographic characteristics overall and by summed SCOFF score distribution (n=1,401).

			Summed SCOFF score				p-value
			Valid		Missing		
Characteristic	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	
Age group (years)							<0.001
14–18	633	(45.2)	416	(65.7)	217	(34.3)	
19–24	768	(54.8)	594	(77.3)	174	(22.7)	
Gender[a]							0.024
Trans man or boy	378	(27.2)	287	(75.9)	91	(24.1)	
Trans woman or girl	213	(15.3)	162	(76.1)	51	(23.9)	
Non-binary[b]	798	(57.5)	553	(69.3)	245	(30.7)	
Ethnicity[c]							0.001
Māori	197	(14.1)	123	(62.4)	74	(37.6)	
Pacific	22	(1.6)	11	(50.0)	11	(50.0)	
Asian	108	(7.7)	84	(77.8)	24	(22.2)	
European/Other	1,070	(76.6)	791	(73.9)	279	(26.1)	
Residential location[d]							0.001
Major/large city	1,116	(81.2)	829	(74.3)	287	(25.7)	
Living elsewhere[e]	258	(18.8)	164	(63.6)	94	(36.4)	

[a]Missing values for 12 participants.
[b]Includes non-binary, genderqueer, agender, or similar identity.
[c]Missing values for four participants.
[d]Missing values for 27 participants.
[e]Includes all other cities, towns or rural areas.
SCOFF = Sick, Control, One stone, Fat, Food.

398 (39.4%) participants from 1,010 with valid total SCOFF scores met the threshold for eating disorder risk. In terms of the individual SCOFF items, just over half (52.5%) screened positive for the "control" screening question, a quarter (24.7%) screened positive for the "food" question and a fifth of participants screened positive for the "sick" (20.9%), "ounce" (19.3%) and "fat" (21.4%) items.

Regression analyses

The distribution of eating disorder risk indication by sample characteristics, together with unadjusted and adjusted PRs and associated 95% CIs derived from complete case modified Poisson regression models, are presented in Table 2. In unadjusted analyses, significantly higher PRs were observed among those aged 14–18 years compared with their 19–24-year-old counterparts (p=0.006), and among Pacific participants compared with the European/Other group (p=0.035). No other significant differences were found. When all the socio-demographic characteristics were simultaneously included in the adjusted analysis (N=985), some confounding was noted with small shifts in estimated adjusted PRs (see Table 2). Although PRs observed among Māori participants were significantly higher at the bivariate level, they were not significant at the multivariate level (see Table 2). This suggests that a larger sample size may uncover significant differences at the multivariate level for eating disorder risk in Māori

Table 2: Distribution of eating disorder risk by sample characteristics, together with unadjusted and adjusted prevalence ratios (PRs) and associated 95% confidence intervals (CIs) derived from modified Poisson regression models.

		Eating disorder risk indicated		Unadjusted model		Adjusted model[c]	
	N	n	(%)	PR	(95% CI)	PR	(95% CI)
Age group (years)							
14–18	416	185	(44.5)	1.24	(1.07–1.44)	1.23	(1.04–1.44)
19–24	594	213	(35.9)	1	(reference)	1	(reference)
Gender							
Trans man or boy	287	120	(41.8)	1.10	(0.93–1.31)	1.07	(0.90–1.27)
Trans woman or girl	162	63	(38.9)	1.02	(0.82–1.27)	1.03	(0.82–1.29)
Non-binary[a]	553	210	(38.0)	1	(reference)	1	(reference)
Ethnicity							
Māori	123	57	(46.3)	1.19	(0.97–1.47)	1.24	(1.00–1.52)
Pacific	11	7	(63.6)	1.63	(1.04–2.58)	1.63	(0.99–2.68)
Asian	84	26	(31.0)	0.79	(0.57–1.11)	0.79	(0.56–1.11)
European/Other	791	308	(38.9)	1	(reference)	1	(reference)
Residential location							
Major/large city	829	315	(38.0)	1	(reference)	1	(reference)
Living elsewhere[b]	164	74	(45.1)	1.19	(0.98–1.44)	1.08	(0.88–1.31)

[a]Includes non-binary, genderqueer, agender or similar identity.
[b]Includes all other cities, towns or rural areas.
[c]Adjusted model had N=985 (97.5%) participants.

transgender youth. The difference between age groups remained significant (p=0.014), whereas the difference between Pacific and European/Other participants was not (p=0.054). While the estimated effect sizes remained unchanged for the latter comparison, the small sample number of Pacific participants and decreased statistical power likely explains this finding.

Sensitivity analyses

Chained equations multiple imputations were undertaken for missing data, using multinomial logistic regression for ethnic identification and gender and binary logistic regression for age group, residential location and eating disorder risk. For this model (N=1,401), the adjusted PR of eating disorder risk indication was 1.21 (95% CI: 1.03–1.43) for those aged 14–18 years compared with participants aged 19–24 years. This estimate is strikingly similar to the complete case estimate of 1.23 (95% CI: 1.04–1.44), suggesting that those with missing summed SCOFF scores did not

Table 3: Distribution of eating disorder risk for those with GAHT demand (unmet and met need) by sample characteristics, together with unadjusted and adjusted PRs and associated 95% CIs derived from modified Poisson regression models.

		Eating disorder risk indicated		Unadjusted model		Adjusted model[c]	
	N	n	(%)	PR	(95% CI)	PR	(95% CI)
GAHT demand							
Met need	368	147	(39.9)	1	(reference)	1	(reference)
Unmet need	277	117	(42.2)	1.06	(0.88–1.27)	0.89	(0.72–1.10)
Age group (years)							
14–18	255	126	(49.4)	1.40	(1.16–1.68)	1.49	(1.21–1.83)
19–24	390	138	(35.4)	1	(reference)	1	(reference)
Gender							
Trans man or boy	275	116	(42.2)	1.06	(0.85–1.31)	0.98	(0.79–1.22)
Trans woman or girl	153	61	(39.9)	1.00	(0.77–1.29)	0.98	(0.76–1.28)
Non-binary[a]	213	85	(39.9)	1	(reference)	1	(reference)
Ethnicity							
Māori	81	39	(48.1)	1.18	(0.92–1.52)	1.24	(0.97–1.59)
Pacific	6	3	(50.0)	1.23	(0.55–2.75)	1.23	(0.52–2.91)
Asian	44	13	(29.5)	0.73	(0.45–1.16)	0.69	(0.42–1.13)
European/Other	513	209	(40.7)	1	(reference)	1	(reference)
Residential location							
Major/large city	529	212	(40.1)	1	(reference)	1	(reference)
Living elsewhere[b]	103	44	(42.7)	1.07	(0.83–1.36)	0.93	(0.73–1.19)

[a]Includes non-binary, gender-queer, agender, or similar identity.
[b]Includes all other cities, towns or rural areas.
[c]Adjusted model had N=628 (97.4%) participants.
GAHT = gender-affirming hormone therapy; PRs = prevalence ratios; CIs = confidence intervals.

differentially affect the regression results.

Secondary aim: unmet need for GAHT and eating disorder risk

Appendix Table 2 presents the distribution of socio-demographic characteristics for the group with a demand for GAHT (partitioned by met or unmet need). The distribution of unmet need for GAHT varied by age group, gender and residential location (all Fisher's exact tests p<0.001). Participants who were aged between 14 and 18 years old, were non-binary or lived outside of a major/large city had higher levels of unmet need for GAHT. However, no significant differences were observed between ethnic groups (Fisher's exact test p=0.12).

The distribution of SCOFF screening measures by demand for met or unmet need for GAHT is presented in Appendix Table 3. The distribution of positive responses for the "control" SCOFF screening question significantly varied between those with a met or unmet need for GAHT (Fisher's exact test p=0.007), with participants who have lost control having higher levels of rates of unmet need (48.2%) compared with those with control (37.3%). However, positive responses across the other SCOFF items and overall eating disorder risk indication appeared similar between those with a met or unmet need for GAHT (all Fisher's exact tests p>0.05).

Table 3 presents the distribution of eating disorder risk for those with GAHT demand (unmet and met need) by sample characteristics together with unadjusted and adjusted PRs and associated 95% CIs derived from modified Poisson regression models (N=645). No significant differences were detected between those with a met or unmet need for GAHT in the unadjusted or adjusted analyses. However, age group remained significantly associated with eating disorder risk indication (p<0.001).

Discussion

Findings from this large national sample of transgender youth in Aotearoa New Zealand revealed high rates of eating disorder risk. These rates (39.4%) were substantially higher than the pooled estimate of eating disorder risk prevalence in youth observed from a general population cohort (22%) constructed with data from 32 studies across 16 countries, where we would expect comparability with the general Aotearoa New Zealand youth population.[31] Among youth, a greater risk was observed in those aged 14–18 years old compared with their older counterparts aged 19–24 years old. Additionally, the results highlight a potentially increased eating disorder risk for Māori and Pacific transgender youth. This finding is particularly important in the context of the low level of treatment and access to specialist eating disorder services observed for Māori with eating disorders relative to non-Māori.[32] This is likely underpinned by systemic bias, largely in the form of under-recognition of eating disorders in Māori.[5] The potentially increased eating disorder risk for Pacific participants is also of importance and warrants further research, particularly given the significant inequitable outcomes for Pacific people in Aotearoa New Zealand in general. While the differences for Māori and Pacific participants were non-significant here, the small sample size yet relatively large estimated effect sizes likely mask these important underlying ethnic differences. We found no significant differences in eating disorder risk between gender groups or residential location.

The high rates of eating disorder risk in transgender youth found here corroborate patterns reported within a recent international systematic review.[33] A scoping review of eating disorder symptomology in transgender youth found that a common theme for those engaged in restrictive and/or compensatory eating behaviours was a motivation to prevent puberty onset or progression.[16] These findings suggest that problematic eating behaviours could serve as a coping mechanism for gender dysphoria or gender-related stress in transgender youth. The association between eating disorder risk and gender dysphoria is likely particularly important among those aged 14–18 years old—an age range where pubertal development is generally more marked.

An association between elevated eating disorder risk and unmet need for gender-affirming healthcare has been identified in previous international research;[34,35] however, this association was not identified here. This finding does not provide evidence for GAHT being either a protective or risk factor for eating disorder risk in transgender youth in this cohort—more research with additional covariates (including those related to minority stress) would be needed to validate this, particularly given the broader context of pathologisation and stigma experienced by transgender people. Furthermore, this finding cannot be extrapolated to suggest there is no association with an unmet need for gender affirming healthcare more broadly, including access to puberty

blockers, voice therapy, hair removal or a range of gender-affirming surgeries. GAHT is only one aspect of a broader range of healthcare that transgender youth may need, and there is evidence of a significant association between unmet need for gender-affirming healthcare as a social determinant of mental health inequities for transgender youth.[17]

Strengths and limitations

The Counting Ourselves survey represents the largest targeted sample of transgender and non-binary people in Aotearoa New Zealand, providing a highly valuable and rich source of information across a range of health and wellbeing measures for transgender youth. Limitations of this research include that this study was based on a non-probability sample, with an over-representation of participants with European ethnicity. The proportion of non-binary participants in this study was similar to the Aotearoa New Zealand 2023 Census transgender population. However, the proportion of trans women and girls was higher and trans men and boys was lower in this study than these Census figures.[36] Further research on this topic would benefit from employing a representative, probability-based sample, although the pragmatic and ethical considerations of doing this must also be recognised. The socio-demographic differences between those with a valid SCOFF measure and those without should also be noted, although the sensitivity analyses revealed little differences between complete case and imputed results. The smaller eligible sample and reduced statistical power for the secondary analysis of the association between eating disorder risk and unmet need for GAHT may explain the lack of any significant finding between these variables. Ideally, a larger sample would redress this, and potentially replicate the significant findings reported elsewhere. Further study into the association of a broader range of met vs unmet healthcare needs and social determinants of health on eating disorder risk in transgender youth would be beneficial to gain a more comprehensive view of the risk and protective factors for eating disorder risk in this population. Stigma and discrimination, gender dysphoria, desire to prevent puberty onset or progression and inadequate access to healthcare have all been associated with an increased risk of eating disorders in transgender youth in the international literature and would merit further exploration in the Aotearoa New Zealand context on that basis.[16,37]

Conclusions

This study provides timely evidence for the Aotearoa New Zealand context, where there has been an increase in eating disorder prevalence in the general population yet little empirical evidence of the heightened eating disorder risk experienced by transgender youth. This study provides novel insights for health professionals and policymakers about the high level of eating disorder risk in transgender youth in Aotearoa New Zealand, particularly for those aged 14–18 years of age. The high levels of eating disorder risk in transgender youth suggest that targeted and culturally responsive prevention, screening and treatment mechanisms are needed to improve health outcomes for this population. Resourcing initiatives to build transgender cultural safety among healthcare providers working in eating disorder care is essential to ensuring equitable and effective support for this population. These findings highlight the need for future research that further examines the underlying risk and protective factors associated with eating disorder risk in transgender youth. Efforts to ensure national eating disorder statistics can be disaggregated for the transgender population in Aotearoa New Zealand would also improve the evidence base available to inform and target public health measures to address the inequities experienced by this population.

COMPETING INTERESTS
Nil.
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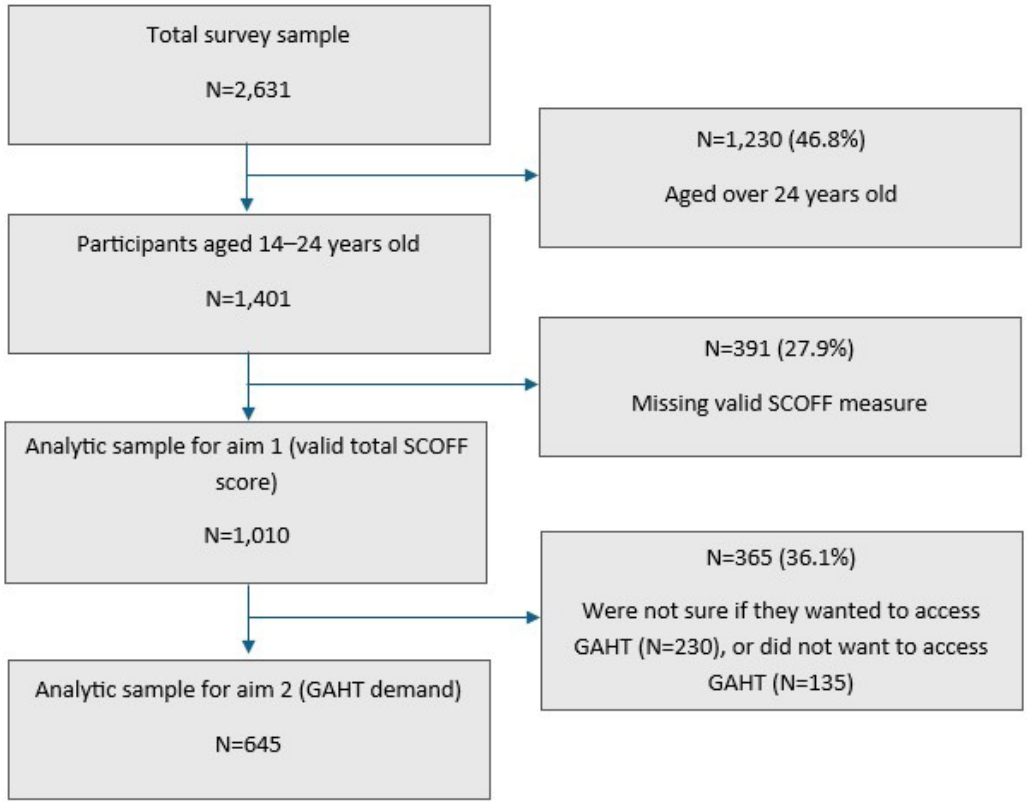
Appendix

Appendix Figure 1: Participant flow diagram.



Appendix Table 1: Distribution of valid responses to the SCOFF screening questions.

SCOFF screening questions	n	(%)
Sick: Do you make yourself sick because you feel uncomfortably full?		
Yes	210	(20.9)
No	797	(79.1)
Control: Do you worry you have lost control over how much you eat?		
Yes	528	(52.5)
No	478	(47.5)
Ounce: Have you recently lost more than 1 stone (6.35kg) in a 3-month period?		
Yes	193	(19.3)
No	809	(80.7)
Fat: Do you believe yourself to be fat when others say you are too thin?		
Yes	215	(21.4)
No	788	(78.6)
Food: Would you say food dominates your life?		
Yes	248	(24.7)
No	758	(75.3)
Eating disorder risk (based on total SCOFF score threshold)		
Indicated	398	(39.4)
Otherwise	612	(60.6)

SCOFF = Sick, Control, One stone, Fat, Food.

Appendix Table 2: Distribution of socio-demographic characteristics by GAHT demand (N=833).

			GAHT demand				p-value
			Met need		Unmet need		
Characteristic	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	
Age group (years)							<0.001
14–18	367	(44.1)	101	(27.5)	266	(72.5)	
19–24	466	(55.9)	335	(71.9)	131	(28.1)	
Gender[a]							<0.001
Trans man or boy	353	(42.7)	187	(53.0)	166	(47.0)	
Trans woman or girl	197	(23.8)	134	(68.0)	63	(32.0)	
Non-binary[b]	277	(33.5)	113	(40.8)	164	(59.2)	
Ethnicity[c]							0.12
Māori	119	(14.3)	54	(45.4)	65	(54.6)	
Pacific	11	(1.3)	4	(36.4)	7	(63.6)	
Asian	56	(6.7)	25	(44.6)	31	(55.4)	
European/ Other	645	(77.6)	351	(54.4)	294	(45.6)	
Residential location[d]							<0.001
Major/large city	668	(81.9)	377	(56.4)	291	(43.6)	
Living elsewhere[e]	148	(18.1)	55	(37.2)	93	(62.8)	

[a]Missing values for six participants.
[b]Includes non-binary, gender-queer, agender, or similar identity.
[c]Missing values for two participants.
[d]Missing values for 12 participants.
[e]Includes all other cities, towns or rural areas.
GAHT = gender-affirming hormone therapy.

Appendix Table 3: Distribution of SCOFF screening measures by GAHT demand.

SCOFF screening questions			GAHT demand				p-value
			Met need		Unmet need		
	n	(%)	n	(%)	n	(%)	
Sick: Do you make yourself sick because you feel uncomfortably full?							0.50
Yes	141	(21.9)	77	(54.6)	64	(45.4)	
No	502	(78.1)	291	(58.0)	211	(42.0)	
Control: Do you worry you have lost control over how much you eat?							0.007
Yes	332	(51.6)	172	(51.8)	160	(48.2)	
No	311	(48.4)	195	(62.7)	116	(37.3)	
Ounce: Have you recently lost more than 1 stone (6.35kg) in a 3-month period?							0.13
Yes	147	(23.0)	92	(62.6)	55	(37.4)	
No	493	(77.0)	273	(55.4)	220	(44.6)	
Fat: Do you believe yourself to be fat when others say you are too thin?							0.056
Yes	143	(22.3)	72	(50.3)	71	(49.7)	
No	498	(77.7)	296	(59.4)	202	(40.6)	
Food: Would you say food dominates your life?							0.85
Yes	157	(24.5)	89	(56.7)	68	(43.3)	
No	485	(75.5)	279	(57.5)	206	(42.5)	
Eating disorder risk (based on total SCOFF score threshold)							0.57
Indicated	264	(40.9)	147	(55.7)	117	(44.3)	
Otherwise	381	(59.1)	221	(58.0)	160	(41.2)	

SCOFF = Sick, Control, One stone, Fat, Food; GAHT = gender-affirming hormone therapy.