Appearance concerns, psychosocial outcomes, and the feasibility of implementing an online intervention for adolescents receiving outpatient burn care

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ABSTRACT

The current study assessed the prevalence of appearance concerns, psychosocial difficulty, and use of an appearance-focused social and psychological support resource (Young Person's Face IT; YPF) within a population of teens (12-17 year-olds) receiving outpatient burn care with the goal to assess the feasibility of routine use of the resource in outpatient burn care. The study sample included 78 patients ages 12-17 receiving outpatient care for burns at 1 hospital. Appearance concerns were measured via the Burn Outcomes Questionnaire Appearance Subscale, the Appearance Subscale of the Body Esteem Scale for Adolescents, and a 2-part question which asked participants directly about appearance concerns related to the burn injury. A large majority (70.0%) of study participants reported appearance concerns on at least 1 appearance measure and girls reported more burn-related appearance concerns compared to boys. Psychosocial difficulty was measured via the Pediatric Symptom Checklist-17 (PSC-17) and measures of social functioning were collected and compared within the sample by burn size, burn location, sex, and appearance concerns. Internalizing symptoms were prevalent on the PSC-17 (18.6% risk) and decreased self-worth and increased social anxiety symptoms were significantly associated with having appearance concerns. Although interest in YPF was high (78.3%), actual use of the resource among those who signed up to pilot it (n=46 participants) was low (19.4% use). Results indicate that there is a need for and interest in appearance-focused social anxiety resources for adolescents with burn injuries such as YPF, but more research is needed to understand its feasibility in clinical practice.

Key words: Pediatric Burns, Appearance, Psychosocial Functioning, Young Person's Face IT, Burn Outcomes Questionnaire, Body Esteem Scale

INTRODUCTION

Appearance-related concerns, including negative body image and worries about physical characteristics, are prevalent across the lifespan, with estimates indicating that between 20-50% of adults experience at least some concerns about their physical appearance.[1,2] Adolescence is a developmental period in which concerns about appearance and negative body image are particularly heightened.[3-6] The prevalence of appearance concerns and body dissatisfaction among young people is estimated between 50-80%[7], with an ever higher prevalence of body dissatisfaction among female youth.[8] Both adults[9] and young people experiencing concerns about their appearance have been found to have significantly more social[10] and mental health problems including depression, anxiety, suicidality, and eating disorders[11-15] compared to those without appearance concerns. The experience of appearance concerns related to body size, weight, or physical characteristics in childhood and/or adolescence can be especially detrimental to a young person's long-term social and emotional development.[16] Therefore, it is important to consider ways to help support young people experiencing concerns about their appearance.

A traumatic, appearance-altering injury, such as a burn injury, increases an individual's risk for developing appearance-related concerns, making psychosocial difficulties such as social anxiety, low self-esteem, depression, and engagement in risky health behaviors even more likely.[17-22] Burn injuries are the third most common form of trauma to children[23] and often result in scarring or other visible differences,[24] however, findings regarding the psychological impact of visible differences have been mixed. Some studies have found that injury size, injury location, and gender are risk factors for increased appearance concerns,[25] with higher risk for such concerns in females with burn injuries,[26] and in females and males with larger burns[27] and/or highly visible facial burns.[28,29] Other studies have reported that burn size, burn location, gender,

and cause of burn injury are less reliable predictors of appearance related concerns and post-injury psychological distress[30,31] than are socio-cognitive factors, including psychological flexibility, social confidence, perceptions of social acceptance, and fear of negative evaluation.[32,33]

Using the appearance subscale of the Burn Outcomes Questionnaire$_{5\text{-}18}$ (BOQ-AS), a measure specifically designed for patients with burn injuries, recent studies have found that appearance concerns are relatively prevalent in 11-18-year-old patients receiving outpatient burn care, with 15-20% of youth scoring at-risk on the appearance subscale.[29,34] Self-worth, on the other hand, as measured by Harter's Self Perception Profile, has been found to be no different or even better in adolescents with burn injuries than in those in the general population.[35] General body esteem, as measured by the Body Esteem Scale for Adolescents (BE-A) has also been found to be more positive in youth with burn injuries compared to non-injured controls.[36,37] Although injury-related appearance concerns and generalized body esteem are related domains, there is some evidence to suggest that they may be distinct.[38] Little empirical evidence exists related to assessing the distinction between more general rather than burn injury-related appearance and body esteem concerns within the adolescent burn population. Especially for clinicians, learning more about the prevalence of injury-related appearance concerns versus low generalized body esteem and the impact of both types of appearance concerns on psychosocial functioning could help inform the creation and dissemination of appearance-related interventions for youth with appearance-altering injuries.

Because previous studies have suggested that young people with all types of visible differences are at an increased risk for developing psychosocial problems, clinicians and researchers have continued to evaluate ways to assess and address their needs. Since individual

therapy and support groups can be difficult to access due to the lack of local and/or appearance-specific therapeutic services or due to the sensitive nature of the topic of appearance, recent research has explored the possibility of developing and implementing online self-help interventions focused on appearance-related distress.[39] For adult populations, internet-based programs have been shown to help bridge geographical barriers to access and to encourage the development of self-management skills – an important component shown to improve psychosocial wellbeing.[40] Until now, the evidence-base for psychosocial interventions that address the specific needs of young people, and particularly adolescent patients with burn injuries, has been sparse.[41]

The recent development of an online intervention designed specifically for young people with conditions or injuries which affect their appearance provides an opportunity to explore whether online appearance-focused tools can be useful within youth populations, and more specifically, within populations of youth with burn injuries. The online intervention, called "YP Face IT" (YPF) is an interactive 7-session multimedia program containing automated text and e-mail reminders to facilitate intervention adherence.[42] The program targets appearance-related distress by teaching young people strategies to manage challenging social interactions, negative appearance-related thinking, and fear of rejection by others.[43] YPF utilizes approaches drawn primarily from cognitive behavioral therapy (CBT) and Social Interaction Skills Training (SIST) and is modeled after a similar program for adults called "Face IT" which was shown in a randomized control trial (RCT) to produce significant reductions in appearance concerns among adults with no adverse effects and was comparable in its impact to a face-to-face CBT intervention.[44] An RCT feasibility study of YPF recently found that it could be successfully implemented in primary care settings, was acceptable to adolescents with a broad range of

visible differences including scarring, could address a gap in appearance-specific psychological care, and had no adverse effects.[45]

To better understand the prevalence of appearance concerns, psychosocial difficulties, and potential utility of the YPF resource within an outpatient pediatric burn setting, the specific goals of the current study included assessing: 1) the prevalence of general appearance concerns as well as appearance concerns related directly to the burn; 2) the relationship between both types of appearance concerns and patient demographics (burn location, burn size, and patient sex); 3) the prevalence of psychosocial difficulties including social anxiety and the relationship between psychosocial difficulty and patient demographics and; 4) the feasibility of incorporating YPF into routine outpatient pediatric burn care for adolescents. Feasibility of YPF use was evaluated by ascertaining interest in the program and comparing interest and use of YPF to other available social and psychological support resources and assessing success in utilization of the resource within a subset of study participants who signed up to use YPF with support from study staff.

METHOD

Study Sample

Study participants were enrolled through the outpatient clinic of a pediatric burn hospital which serves more than 3,000 patients from the US and other countries each year. Using the daily outpatient appointment roster, patients were identified as eligible if they met the following criteria: (1) the patient had experienced a burn injury (with no restriction on time since injury); (2) the patient was between 12-17 years of age; (3) the patient presented with a parent or legal guardian; (4) both the parent or legal guardian and patient spoke English; (5) study staff received

approval to approach the patient from a clinician familiar with the patient; and (6) the patient was not scheduled for surgery on the same day as their outpatient appointment.

Procedures

All procedures were reviewed and approved as human subject research by the hospital's Institutional Review Board and the ethical principles outlined in the Declaration of Helsinki were closely followed. Eligible patients and parents were approached in the outpatient waiting room by a member of the study staff who explained the goals of the study and obtained informed verbal consent from the patient and parent. There were 2 phases of data collection during the 27-month recruitment period. In Phase I (17-months), the goal was to collect data on participant reported appearance concerns, patient-reported psychosocial functioning, and determine interest in psychosocial support resources including YPF. In Phase II (10-months), participants completed the same measures of appearance concerns and psychosocial functioning on a tablet computer device that recorded all responses in real time using an application called Tonic and had the opportunity to pilot the use of the YPF resource if interested. Tonic's application is SSAE 16 SOC 1 certified and HIPAA compliant and allows for secure (encrypted) and convenient survey administration anywhere that has internet access.

During Phase I, participants were asked about their interest in the following available psychosocial resources: (1) YPF; (2) an online educational resources for burn survivors focused on both physical and psychosocial recovery; (3) an online-chat group support for burn survivors and/or their families; (4) an in-person group support for burn survivors and/or their families at a local hospital; (5) an activities and outings social group for burn survivors at the same hospital where they were receiving outpatient care; (6) a corrective/reconstructive makeup clinic held at the hospital; and (7) a week-long healing retreat for female burn survivors. Participants were

provided with an information sheet about the resources and asked to circle or verbally indicate those that they were interested in. In the study's second phase, after determining interest in YPF within the study population, participants were shown the same resource list and if interested in any, were offered help in accessing them by study staff. Participants who were interested in using YPF were shown how to log-in and navigate the site by a member of study staff. Parents and adolescents were asked to provide their preferred contact information and received a weekly reminder via telephone or email from a member of study staff to encourage them to complete the 7 YPF sessions and discuss questions about use of the resource. Although automated reminders to complete YPF sessions are available through the program, they were not utilized in the current study due to U.S. data security concerns.

Six-months post-study enrollment, participants and their parents who enrolled in the study's second phase were contacted and asked to complete feedback surveys regarding the adolescent's use of psychosocial support resources including YPF. Participants and parents of participants who signed up to use YPF were also asked about the adolescent's use of the YPF program and to provide feedback on how they thought the program could be improved.

Measures of Appearance Concerns

Appearance concerns were measured using 3 questionnaires to assess more general appearance concerns as well as concerns related directly to the burn injury. To measure more general appearance concerns, participants completed the ten-item Appearance Subscale of the Body Esteem Scale for Adolescents (BE-A) which evaluates general feelings about appearance.[46] Using a 5-point Likert scale ranging from 0 (never) to 4 (always), participants respond to the following prompts: (1) I worry about the way I look; (2) I like what I see when I look in the mirror; (3) I wish I looked like someone else; (4) I'm pretty happy about the way I look; (5) I

wish I looked better; (6) There are lots of things I'd change about my looks if I could; (7) I like what I look like in pictures; (8) I'm looking as nice as I'd like to; (9) I feel ashamed of how I look; and (10) My looks upset me. The total score is computed by taking the mean of the item scores, with higher scores indicating more negative feelings about appearance. The BE-A has shown a high rate of internal consistency for both girls and boys (α=0.94 and α=0.90, respectively).[47] Within the current study, a gender-specific cutoff score higher than the average baseline scores of a comparison group of English school children (3.72 for boys and 3.22 for girls) was used to assess the severity of general appearance concerns of participating patients. [47]

Burn-related appearance concerns were assessed using 2 different questionnaires – the 4-item appearance subscale of the BOQ-AS which has been validated for use in 5-18-year-olds [48-50] and a 2-part question created specifically for the study. On the BOQ-AS, adolescents are asked to use a 5-point Likert scale ("definitely true" to "definitely false") to rate their agreement to the following questions: (1) I feel that the burn is unattractive to others; (2) I think people would not want to touch me; (3) I feel unsure of myself among strangers; and (4) Changes in my appearance have interfered with my relationships. Scores are computed using a t-score transformation and compared to a standardized mean of 50 and standard deviation of 10.[51] A score is considered "at-risk" (in this case, of having clinically significant appearance concerns) if it is 1 standard deviation or more below the mean of 50.[48,52] Therefore, lower scores on the BOQ-AS indicate more appearance concerns.

The 2-part question about appearance concerns was created to obtain a direct answer to the question of whether the adolescent felt that they had a burn related appearance concern. It asked respondents if they had changes in their appearance due to the burn injury (yes, no, or maybe) and if so, if they felt worried or uncomfortable about those changes (yes, no, sometimes).

If participants answered "yes" or "maybe" to having changes in their appearance due to the burn injury and answered "yes" or "sometimes" to feeling worried or uncomfortable about those changes, they were categorized as having burn-related appearance concerns according to this measure.

Measuring Psychosocial Functioning

The Pediatric Symptom Checklist

Psychosocial functioning was measured via the Pediatric Symptom Checklist. The 17-item version of the Pediatric Symptom Checklist (PSC-17)[53] measures overall psychosocial risk and has a subscale that assesses internalizing (depression/anxiety), attention (ADHD), and externalizing (conduct) symptoms. The youth-report PSC-17 form (PSC-17Y)[54] has been validated in large samples and is used in a range of pediatric settings. The PSC-17Y global scale measures symptoms related to internalizing, externalizing, and attention problems and has been shown to have a high degree of internal consistency (α=0.85).[54] Respondents are asked to rate the frequency of 17 symptoms on a 3-point scale (Never, Sometimes, or Often). Youth are considered "at-risk" for general psychosocial problems if the score is ≥ 15, "at-risk" for internalizing or attention problems if the score is ≥ 5, and "at-risk" for externalizing problems if the score is ≥ 7. [20,53,54]

Measures of Social Functioning and Anxiety

Social functioning and anxiety were assessed via 4 scales: (1) the Social Anxiety Scale for Adolescents (SAS-A)[55] which contains an overall scale and 3 subscales: Fear of Negative Evaluation by others (FNE), Social Avoidance and Distress in New Situations (SAD-N), and Social Avoidance and Distress in General Situations (SAD-G); (2) the Perceived Stigmatization Questionnaire (PSQ); (3) Harter's Self-Perception Profile for Adolescents (SPPA)[56] which

234 includes a global measurement of self-worth and a romantic concerns subscale, and; (4) the Body
235 Image Life Engagement Questionnaire (BILEQ).[47]

236 *The Social Anxiety Scale for Adolescents*

237 The 22-item SAS-A[55] measures social anxiety and contains 3 subscales (FNE, SAD-N,
238 and SAD-G) as well as an overall score. The SAS-A asks adolescents about the degree to which
239 they experience feelings such as shyness around others and worries about what other people are
240 saying about them. For example, the SAS-A asks youth to rate the degree to which they "get
241 nervous when [they] meet new kids," and "worry about being teased." The measure has been
242 used in samples of adolescents in public secondary schools[57] and has shown good internal
243 consistency across genders and grades (range α=0.91-0.93) as well as across the 3 subscales and
244 the overall score (α=0.90 for FNE, α=0.83 for SAD-N, α=0.77 for SAD-G, and α=0.92 for the
245 SAS-A total).[55] Questions are answered on a 5-point Likert scale ranging from 1 (not at all) to 5
246 (all the time), with a total score ≥ 50 considered to be an indication of clinically significant levels
247 of social anxiety.[58] The current study focuses on the domains of social anxiety measured on the 3
248 subscales of the SAS-A.

249 *The Perceived Stigmatization Questionnaire*

250 The 21-item PSQ asks youth about stigmatizing behaviors related to appearance which
251 are grouped into 3 categories: absence of friendly behavior, confused/staring behavior, and
252 hostile behavior by others. The PSQ has been validated in populations of youth and adults with
253 burn injuries and good internal consistency has been found within pediatric samples (α=0.91).
254 [59,60] Participants are asked to rate how often they experience a behavior (for example, "People
255 don't know how to act around me" or "People seem embarrassed by my looks") on a 5-point
256 Likert scale ranging from 1 (never) to 5 (always). An adolescent's score is calculated by taking

the mean of the weighted item scores, with a higher score reflecting higher perceived stigmatization.

Harter's Self-Perception Profile for Adolescents

Harter's Self-Perception Profile for Adolescents (SPPA) measures how adolescents perceive themselves across various domains, including physical appearance, athletic competence, romantic appeal, and global self-worth.[56] The current study administered the 5-item Romantic Appeal subscale and 5-item Global Self-Worth scale which asks youth to identify with statements such as whether they feel happy with themselves and feel that those who they are romantically attracted to would like them back. Higher scores on the SPPA indicate more favorable ratings of self-worth and romantic appeal. Strong internal consistency has been found on both of these SPPA scales (α=0.75-0.85 for Romantic Appeal and α=0.80-0.89 for Global Self-Worth) within adolescent student populations.[56]

The Body Image Life Engagement Questionnaire

The BILEQ assesses the extent to which youth avoid activities across social, recreational and educational domains because they feel bad or worry about how they look. The 10-item measure asks adolescents to use a rating scale of 1 ("hasn't stopped me at all") to 4 ("stopped me all the time") to rate how often worries about their appearance have stopped them from activities such as attending a social event, raising their hand in class, or spending time with friends and family. For example, youth are asked to rate how often (in the past 2 weeks) they have felt hindered from doing activities including going to the beach or pool, shopping for clothes, and trying out for a team or club because they had worries or felt bad about the way they looked. A higher mean score across the summed items indicates lower life engagement. The measure has

been utilized to assess life engagement with high internal consistency (α=0.93 in girls and 0.96 in boys).[47]

Burn Size and Location

Data regarding study participant's burn size (percent Total Body Surface Area; TBSA) and location were collected from the electronic medical record and utilized to compare prevalence of appearance concerns, psychosocial difficulty, and social functioning within groups of participants with similar injury types. Data related to burn size were available for 74 of the 78 participants. Participants were categorized as having either large (above 50.0% TBSA), medium (between 25.1-49.99% TBSA) or small burns (below 25.0% TBSA). Data related to burn location was available for all participants. Participants were also categorized according to whether or not they experienced a burn injury on the face, head, neck, or hands/wrist due to the visibility of burns in those areas.

Data Analysis

Analyses were conducted using SPSS version 24.0 (IBM Corp. Armonk, NY, USA). Descriptive statistics (frequencies) were utilized to assess prevalence of categorical (yes/no) appearance concerns according to the 3 measures (BOQ-AS, BE-A, and the 2-part question), prevalence of psychosocial problems on the PSC-17 (risk/no risk), and interest in using YPF (yes/no). Chi-square analyses were utilized to assess differences in prevalence of appearance concerns, psychosocial difficulty, and resource interest based on categorical burn size (small vs. medium vs. large), burn location (face, head, or neck vs. other and hand or wrist vs. other), and participant sex (male vs. female). Since scores on measures of social functioning and anxiety (SAS-A, PSQ, SPPA, BILEQ) were non-normally distributed ordinal data, they were compared across categorical burn size and location groups, participant sex, and appearance concerns groups

using the Mann-Whitney U-test in the case of 2-group comparisons (burn location and sex). The Kruskal-Wallis 1-way analysis of variance test was utilized to compare mean rank scores amongst the 3 burn size groups. All significance tests were 2-tailed and statistical significance was set to 0.05. Only data from subjects with complete PSC-17 and social functioning and anxiety measures were included in the analyses. The prevalence of appearance concerns according to the 3 measures, PSC-17 risk, and the median and interquartile range of scores on measures of social functioning and anxiety are reported in Table 2.

RESULTS

Participant Enrollment and Demographics

A total of 5,634 patients were screened for study participation and 366 (6.5%) met study eligibility requirements. A majority of ineligible patients (77.9%) did not fit age criteria and the remainder did not speak English (14.2%), did not have a burn injury (3.7%), were not accompanied by a legal guardian or did not receive clinician approval for study participation (4.2%). Of the 366 eligible patients, 78 (21.3%) enrolled and completed a majority of measures (n=32 in the first phase and n=46 in the second phase). Participant demographics are reported in Table 1. The mean participant age was 14.84 (*SD*=1.92) years old, and participant Total-Body Surface Area (TBSA) ranged from 0.20%-88.0% with a sample mean of 17.82% (*SD*=22.82). Most of the sample (77.0%; n=57) had burns that were less than 25.0% TBSA, 10.8% had medium (25.1-49.9%) burns, and 12.2% had large (above 50.0% TBSA) burns. A total of 34.6% of the sample had a burn injury on the face, head, or neck. The most frequently affected burn location within the sample was the hand and/or wrist (53.8%).

Prevalence of Appearance Concerns

Appearance concerns were reported on at least 1 of the 3 measures by 70.0% (n=53) of the participants who enrolled. The largest proportion of appearance concerns were reported on the BE-A, with 63.8% (n=44) of participants scoring above the gender-matched comparison group of school-aged children without burn injuries. On the 2-part burn-related appearance concerns questions, 34.2% (n=25) participants indicated experiencing appearance concerns. The lowest prevalence of appearance concerns was reported on the BOQ-AS, where only 2 (3.1%) participants scored at-risk. No significant differences in prevalence of appearance concerns were found among participants with face, head, or neck burns versus those without, participants with hand/wrist burns versus those without, or amongst the 3 burn size categories. However, females reported a significantly higher prevalence of appearance concerns on the 2-part question about burn-related appearance concerns compared to males (X^2=5. 27; 46.2% vs. 20.6%, p<.05).

Psychosocial Functioning on the PSC-17

The prevalence of general psychosocial problems within the participant sample as measured by the PSC-17 overall risk score was 15.3%. On the internalizing subscale, 18.6% of participants scored-at risk, compared to 9.1% risk on the externalizing and 6.1% risk on the attention subscales. No significant differences were found in the proportion of participants with risk on any PSC-17 scales when compared among sex, burn size group, or burn location categorized as face, head, or neck vs. other. Participants with hand burns were significantly more likely to be at-risk on the PSC-17 internalizing subscale compared to participants without hand burns (28.1% vs. 7.4%; X^2=4.14, p<.05). Psychosocial risk was more significantly related to the endorsement of appearance concerns. The 2 participants who scored at-risk on the BOQ-AS were at-risk on the PSC-17 internalizing subscale, therefore 100.0% of those who endorsed appearance concerns on the BOQ-AS were at-risk on the PSC-17 internalizing subscale

compared to 15.8% of those who did not endorse appearance concerns on the BOQ-AS (X^2=9.03, p<.01). A significantly larger proportion of participants who endorsed appearance concerns on the 2-part question were at-risk on the PSC-17 internalizing subscale and the PSC-17 overall score compared to those who did not endorse appearance concerns (Internalizing: X^2=5.73; 33.3% vs. 8.3%, p<.05; Overall: X^2=4.10; 23.8% vs. 5.6%, p<.05).

Social Functioning and Anxiety

Participants completed 4 measures related to social functioning and social anxiety, including the Social-Anxiety Scale for Adolescents (SAS-A) which includes 3 scales (social avoidance to new situations, general distress and social avoidance, and fear of negative evaluation), the Perceived Stigmatization Questionnaire (PSQ), Harter's Self-Perception Profile for Adolescents (SPPA) which included a measure of self-worth and romantic appeal, and the Body Image Life Engagement Questionnaire (BILEQ). Median and mean rank scores were compared across burn size groups, burn location groups, sex, and appearance concerns which was categorized to compare the 70.0% of the sample who endorsed appearance concerns on any of the 3 measures versus the 30.0% who did not report appearance concerns.

No significant differences in median scores were found when comparing scores on measures of social functioning and anxiety across groups based on participant burn size, location, or sex. However, appearance concerns were significantly related to scores on the fear of negative evaluation scale of the SAS-A and the self-worth scale of the SPPA. Participants who reported appearance concerns had significantly more severe symptoms related to fear of negative evaluation on the SAS-A (Mdn=17.00) compared to those who did not report appearance concerns (Mdn= 11.50; U=302.50, p<.01). Reports of appearance concerns were also

significantly associated with lower ratings of self-worth on the SPPA (Mdn=3.20) compared to participants who did not report appearance concerns (Mdn= 3.60, U=277.00, p<.01).

Assessing YP Face IT Feasibility

After completing measures of appearance and psychosocial functioning at the time of study enrollment, participants were asked about their interest in the list of available support resources including YPF. During the first phase of the study, of the 27 youth who reviewed the resource list, 11 (40.7%) indicated interest in 1 or more of the resources, which included 7 (26.0%) who said they would be interested in using YPF if it was available. During the second phase of the study, 46 participants enrolled and 38 (82.6%) indicated interest in 1 or more of the resources, with 36 (78.3%) indicating interest in YPF specifically. These participants were provided with sign in information, instructions on how to use the resource, weekly reminders, and support from study staff in completing the sessions. Support included the initial review of the resource at time of enrollment and reaching out to answer questions about resource use during the study period.

Although 36 participants signed up to use YPF, in the 6-months following Phase II study enrollment, only 7 (19.4%) of those who signed up completed at least some of the first session, which introduces the content covered in YPF and is focused on describing common problems experienced by youth with visible differences. All participants who signed up were contacted (if parents specified themselves as the primary contact, they were contacted) to encourage the use of the YPF and to see if the participant had any questions. Outreach attempts via email, text, or telephone calls were terminated after 4 tries if there was no response or immediately if the participant or parent indicated that they were no longer interested in use of YPF (2 adolescents). For the 7 participants who used YPF, there were an average of 4.3 outreach attempts to

encourage session completion. At 6-months post-enrollment, only 1 participant had completed more than half of the 7 YPF sessions. A majority (72.2%) of participants who signed up to use YPF reported appearance concerns on at least 1 measure. However, rates of appearance concerns reported on the 3 measures were not significantly higher in participants who signed up for YPF (72.2%) compared to those who did not (70.0%).

Participants and parents of participants who enrolled in the second phase of the study (n=46) were contacted 6-months post-enrollment to obtain more information about their use of YPF and/or other available resources. Twenty participants and 21 parents (8 participant/parent dyads) completed follow-up surveys. No demographic differences were found between study participants who completed follow-up surveys and those who did not. Four (20%) participants who completed follow-up surveys indicated that they had used a psychosocial resource other than YPF (burn camps and the corrective makeup clinic) in the 6-months following study enrollment. Of the 7 participants who utilized YPF, 5 completed surveys about using it and 3 offered specific feedback about their experience. One participant cited not having access to a device connected to the internet as barrier to using YPF. Another participant who was 17-years old stated that YPF could be improved if it were tailored more to an older age group, and a 14-year-old participant suggested that having access to reviews of the resource by other youth with burn injuries would have helped her engage with the resource more, so she could decide whether it was applicable to her. Parent feedback closely mirrored the information provided by study participants. The parent of the 17-year-old YPF participant also noted that it may be useful to tailor the content to older teens and the parent of a 13-year-old participant noted that she would be interested in having access to more parent-focused information mirroring the content covered in YPF.

DISCUSSION

Prevalence of Appearance Concerns

The current study assessed the prevalence of both general and burn-related appearance concerns within a sample of adolescents receiving routine outpatient pediatric burn care in 1 hospital and explored the relationship between both types of appearance concerns and psychosocial functioning, as well as the feasibility of implementing the YPF online resource within the population. Results indicated that the overwhelming majority (70.0%) of adolescents receiving follow up care for burn injuries reported appearance concerns. Almost two-thirds (63.8%) of all participants reported heightened general appearance concerns when scores on the Appearance Subscale of the Body Esteem Scale were compared to those of a non-burned adolescent sample, compared to only 34.2% who reported appearance concerns related to the burn injury on a 2-part question and 3.1% who additionally reported appearance concerns on the BOQ-AS. Reports of appearance concerns were not found to be significantly related to burn size or location, however, girls in the sample reported more burn-related, but not general, appearance concerns on the 2-part question compared to boys.

Although there was evidence that most of the adolescents in this burn clinic sample had some form of appearance concern, general concerns were more common than burn specific concerns and different measures of appearance concerns yielded varying levels of concerns within the population. These findings suggest that estimates of the prevalence of appearance concerns may be influenced by the measure used to assess them. One potential reason for such a range in appearance concern prevalence may be the content and order of questions within the measures used. The BOQ-AS is a measure of appearance within the burn population and includes 1 question which directly asks about the burn injury (“I feel that the burn is unattractive

to others") and 3 questions which ask about general appearance-related anxiety. Therefore, the measure assesses both general and burn-related appearance concerns which may have affected the prevalence of risk in the current study. If, for example, an adolescent was experiencing general appearance concerns but did not have concerns directly related to their burn injury, they may have qualified as at-risk on the BES-A and not at risk on the BOQ-AS since only 1 question asks about general appearance concerns on this measure. Whatever the reason for the discrepancy, the findings obtained when using a more direct 2-part question about burn related appearance concerns, and even more so when using this question as well as measures of general appearance concerns combined, suggest that the prevalence of appearance concerns may be much higher in the adolescent burn population than some previous studies have reported.

Appearance Concerns and Psychosocial Functioning

Results confirm earlier research indicating that appearance concerns are associated with significantly worse psychosocial outcomes in adolescents who are recovering from burn injuries. In the current study, fear of negative evaluation and self-worth were particularly affected by the presence of appearance concerns. Concerns about appearance related to the burn injury were less prevalent than general appearance concerns and only when considering combined general and burn-related appearance concerns did significant differences in psychosocial functioning in those with versus without appearance concerns, particularly problems related to internalizing symptoms, emerge. Therefore, findings confirm the high prevalence of appearance concerns amongst the adolescent population and suggest that general appearance concerns and burn-related appearance concerns are interrelated psychosocial domains. More research is needed to determine which patients are most at-risk for increased general appearance concerns or the

development of burn-related appearance concerns post-burn injury so they can receive support earlier on during treatment.

Feasibility of Implementing YP Face IT

Given the previously reported prevalence of both appearance concerns and psychosocial problems in adolescents who have experienced a burn injury, the current study also assessed whether the YPF online resource could be feasibly implemented to fill the need for an accessible, evidence-based appearance-focused tool tailored to adolescents receiving outpatient burn care. Results demonstrated strong interest in YPF during Phase I as well as Phase II of the study, where nearly 80% (n=36) of enrolled study participants signed up to access the resource. However, in the 6-months following enrollment in the use of YPF, only 7 (19.4%) of the adolescents who expressed interest in YPF utilized even a part of a session and none finished all 7 sessions, indicating that more research is needed to understand how to best support in-clinic or at-home resource use. Follow-up surveys revealed that use of other available resources mentioned to participants was also very low, which aligns with literature indicating that young people appear to be reluctant to engage in psychological support.[61,62] Specific feedback from 3 adolescents who used YPF revealed that lack of at-home access and age-specific applicability were deterrents to resource use. YPF requires an internet-enabled device, which according to the feedback surveys, was not consistently available to all participants. The YPF resource contains 7 sessions covering a range of topics such as navigating peer relationships, tools for combatting social anxiety, how to reach out to social support networks, and dating and romantic relationships. Although each session was available to study participants before enrollment, users may have benefited from more individual assessment and guidance on which YPF sessions would be most applicable to them.

Although many adolescents signed up to use the YPF resource in the outpatient clinic, only a minority of them logged on at home to engage with the sessions. The reasons for this lack of retention was not immediately apparent from our study. We were intrigued by a parent's suggestion that it may be beneficial in future implementations of YPF to concurrently offer a parent-focused version of the program since it would allow parents to learn and disseminate the tools taught in YPF at a pace they find appropriate to their own child. In a recent study completed by Heath and colleagues (2019) in the UK, a parent-focused resource prototype was tested in a sample of parents of children with burn injuries.[63] The study's results showed that parents rated the tool positively and appreciated having access to an online resource which empowered them to seek out relevant information whenever it became necessary. It is possible that offering parents the use of YPF could prove to be similarly beneficial within the current study's outpatient population. Similar observations could be made about the potential for having clinicians already working in settings where young people are recovering from burns use YPF in a more tailored approach to treating appearance concerns post-injury.

There is some recent evidence to suggest that burn care clinicians would also value a brief survey to assist in screening patients for appearance concerns and related psychosocial distress within clinical burn settings.[64] Similarly, findings have demonstrated that outpatient clinicians are able to routinely incorporate information about the patient's psychosocial functioning into clinical care decisions within the context of outpatient burn care.[34] Therefore, if patients were regularly screened for appearance concerns and/or more general psychosocial problems using brief measures such as the 2-part question or PSC-17, it might help clinicians identify patients who have or are at-risk for developing appearance concerns and who might benefit from referrals to traditional psychosocial care and/or the use of YPF. We conclude that

YPF could be a useful and accessible tool for adolescents in outpatient burn care, especially if both their parents and their clinicians are given the opportunity to participate in offering them the use of the resource as well as the chance to support the adolescent in completing the YPF sessions.

Future Research and Study Limitations

Based on the relatively high prevalence of appearance concerns and psychosocial difficulties within the outpatient pediatric burn population and the amount of interest expressed in the YPF online resource, we believe that with the right approach and support, YPF could be a useful resource for adolescents and/or their parents/clinicians. The current study highlights the value of incorporating screening for both general and burn-specific appearance concerns into routine outpatient burn care, and a need for caregiver-and/or clinician-oriented resources focused on providing them with the vocabulary and tools needed to support young people through the social and emotional difficulties which may occur after a burn injury.

The current study had a number of limitations. First, for the most part, participants had smaller burns. Second, the YPF resource was created within a framework of Western cultural norms and participants were only eligible to participate if they were English-speaking. The applicability of the program to youth from other cultural or language groups was therefore untested. Third, the study was completed in a single outpatient burn clinic in which patients were predominantly receiving surgical or wound care rather than psychiatric care or counseling. Therefore, patients may not have been prepared to consider psychosocial as well as physical components of their care since their visits when recruited for the study were predominantly focused on physical recovery. Fourth, fewer than half of the participants who enrolled in the second phase of the study completed feedback surveys, limiting the generalizability of

conclusions drawn from them, although the cohort was found to be representative of the general study population. Although our findings must be considered within the context of study limitations, they nevertheless suggest a need for further research to investigate ways to prioritize identifying and assessing adolescent appearance concerns and psychosocial problems within the context of outpatient burn care.

References

1. Harris DL, Carr AT. Prevalence of concern about physical appearance in the general population. *British journal of plastic surgery.* 2001;54(3):223-226.

2. Foundation TB. Insights in body esteem: A survey of Australians' experience of body image and its impact on day to day life. *The Butterfly Foundation* n.d.; https://thebutterflyfoundation.org.au/assets/Uploads/Insights-into-Body-Esteem-Report-PDF5.pdf

3. Johnston O, Reilly J, Kremer J. Women's experiences of appearance concern and body control across the lifespan: Challenging accepted wisdom. *Journal of health psychology.* 2004;9(3):397-410.

4. Bucchianeri MM, Arikian AJ, Hannan PJ, Eisenberg ME, Neumark-Sztainer D. Body dissatisfaction from adolescence to young adulthood: Findings from a 10-year longitudinal study. *Body image.* 2013;10(1):1-7.

5. Gilbert S, Thompson JK. Body Shame in Childhood and Adolescence: Relation to Eating Disturbance and Overall Psychological Functioning. London: Routledge; 2002.

6. Tiggemann M, Slevec J. Appearance in adulthood. *Oxford handbook of the psychology of appearance.* 2012:142-159.

7. Mental Health Foundation. Body image in childhood. 2020; https://www.mentalhealth.org.uk/publications/body-image-report/childhood

8. Golan M, Hagay N, Tamir S. Gender related differences in response to "in favor of myself" wellness program to enhance positive self & body image among adolescents. *PloS one.* 2014;9(3):e91778.

9. Mental Health Foundation. Body Image Report - Executive Summary. 2020; https://www.mentalhealth.org.uk/publications/body-image-report/exec-summary

10. Davison TE, McCabe MP. Adolescent body image and psychosocial functioning. *The Journal of social psychology.* 2006;146(1):15-30.

11. Orbach I, Stein D, Shani-Sela M, Har-Even D. Body attitudes and body experiences in suicidal adolescents. *Suicide and Life-Threatening Behavior.* 2001;31(3):237-249.

12. Gilliland MJ, Windle M, Grunbaum JA, et al. Body image and children's mental health related behaviors: Results from the healthy passages study. *Journal of pediatric psychology.* 2007;32(1):30-41.

13. Brausch AM, Gutierrez PM. The role of body image and disordered eating as risk factors for depression and suicidal ideation in adolescents. *Suicide and Life-Threatening Behavior.* 2009;39(1):58-71.

14. Fang A, Hofmann SG. Relationship between social anxiety disorder and body dysmorphic disorder. *Clinical psychology review.* 2010;30(8):1040-1048.

15. Ahadzadeh AS, Rafik-Galea S, Alavi M, Amini M. Relationship between body mass index, body image, and fear of negative evaluation: Moderating role of self-esteem. *Health psychology open.* 2018;5(1):2055102918774251.

16. Markey, CN. Invited Commentary: Why Body Image is Important to Adolescent Development. *J Youth Adolescence*. 2010; 39: 1387–1391. https://doi.org/10.1007/s10964-010-9510-0.

17. Rumsey N, Harcourt D. Body image and disfigurement: issues and interventions. *Body image.* 2004;1(1):83-97.

18. Fauerbach JA, Heinberg LJ, Lawrence JW, et al. Effect of early body image dissatisfaction on subsequent psychological and physical adjustment after disfiguring injury. *Psychosomatic medicine.* 2000;62(4):576-582.

19. Kleve L, Robinson E. A survey of psychological need amongst adult burn-injured patients. *Burns.* 1999;25(7):575-579.

20. Murphy JM, Bergmann P, Chiang C, et al. The PSC-17: subscale scores, reliability, and factor structure in a new national sample. *Pediatrics.* 2016;138(3):e20160038.

21. Phillips C, Fussell A, Rumsey N. Considerations for psychosocial support following burn injury—a family perspective. *Burns.* 2007;33(8):986-994.

22. Masnari O, Schiestl C, Rössler J, et al. Stigmatization predicts psychological adjustment and quality of life in children and adolescents with a facial difference. *Journal of pediatric psychology.* 2013;38(2):162-172.

23. Toon MH, Maybauer DM, Arceneaux LL, et al. Children with burn injuries-assessment of trauma, neglect, violence and abuse. *Journal of injury and violence research.* 2011;3(2):98.

24. Lawrence J, Fauerbach J, Mason S. Understanding and Improving Body Image after Burn Injury. *University of Washington Model Systems Knowledge Translation Center.* 2017.

25. Magee L. Traumatic injuries and body image. *Encyclopedia of body image and human appearance*: Elsevier; 2012:790-797.

26. Rimmer RB, Bay RC, Alam NB, et al. Burn-injured youth may be at increased risk for long-term anxiety disorders. *Journal of Burn Care & Research.* 2014;35(2):154-161.

27. Thombs BD, Lawrence JW, Magyar-Russell G, Bresnick MG, Fauerbach JA. From survival to socialization: a longitudinal study of body image in survivors of severe burn injury. *Journal of Psychosomatic Research.* 2008;64(2):205-212.

28. Ryan CM, Lee A, Stoddard FJJ, et al. The effect of facial burns on long-term outcomes in young adults: a 5-year study. *Journal of Burn Care & Research.* 2018;39(4):497-506.

29. Weed VF, Canenguez K, Romo S, et al. The use of a brief measure to assess longitudinal changes in appearance concerns for youth recovering from burn injuries. *Journal of Burn Care & Research.* 2019;40(1):97-103.

30. Stubbs TK, James LE, Daugherty MB, et al. Psychosocial impact of childhood face burns: a multicenter, prospective, longitudinal study of 390 children and adolescents. *Burns.* 2011;37(3):387-394.

31. Moss TP. The relationships between objective and subjective ratings of disfigurement severity, and psychological adjustment. *Body image.* 2005;2(2):151-159.

32. Shepherd L, Reynolds DP, Turner A, O'Boyle CP, Thompson AR. The role of psychological flexibility in appearance anxiety in people who have experienced a visible burn injury. *Burns.* 2019;45(4):942-949.

33. Clarke A, Thompson AR, Jenkinson E, Rumsey N, Newell R. *CBT for appearance anxiety: psychosocial interventions for anxiety due to visible difference*: John Wiley & Sons; 2013.

34. Riobueno-Naylor A, Romo S, Kazis L, et al. Usefulness of a Novel System for Feedback of Patient-Reported Outcome Measures in Children Recovering From Burns. *Journal of Burn Care & Research.* 2019;40(6):776-784.

35. Robert R, Meyer W, Bishop S, Rosenberg L, Murphy L, Blakeney P. Disfiguring burn scars and adolescent self-esteem. *Burns.* 1999;25(7):581-585.

36. Pope S, Solomons W, Done D, Cohn N, Possamai A. Body image, mood and quality of life in young burn survivors. *Burns.* 2007;33(6):747-755.

37. Lawrence JW, Rosenberg LE, Fauerbach JA. Comparing the body esteem of pediatric survivors of burn injury with the body esteem of an age-matched comparison group without burns. *Rehabilitation Psychology.* 2007;52(4):370.

38. Hodder K, Chur-Hansen A, Parker A. A Thematic Study of the Role of Social Support in the Body Image of Burn Survivors. *Health Psychol Res.* 2014;2(1):1196-1196.

39. Pennant ME, Loucas CE, Whittington C, et al. Computerised therapies for anxiety and depression in children and young people: A systematic review and meta-analysis. *Behaviour Research and Therapy.* 2015/04/01/ 2015;67:1-18.

40. Bessell A, Moss TP. Evaluating the effectiveness of psychosocial interventions for individuals with visible differences: A systematic review of the empirical literature. *Body image.* 2007/09/01/ 2007;4(3):227-238.

41. Jenkinson E, Williamson H, Byron-Daniel J, Moss TP. Systematic Review: Psychosocial Interventions for Children and Young People With Visible Differences Resulting From Appearance Altering Conditions, Injury, or Treatment Effects. *Journal of pediatric psychology.* 2015;40(10):1017-1033.

42. Williamson H, Griffiths C, Harcourt D. Developing young person's Face IT: Online psychosocial support for adolescents struggling with conditions or injuries affecting their appearance. *Health psychology open.* 2015;2(2).

662 **43.** Williamson H, Hamlet C, White P, et al. Study protocol of the YP Face IT feasibility
663 study: comparing an online psychosocial intervention versus treatment as usual for
664 adolescents distressed by appearance-altering conditions/injuries. *BMJ Open.*
665 2016;6(10):e012423.
666 **44.** Bessell A, Brough V, Clarke A, Harcourt D, Moss TP, Rumsey N. Evaluation of the
667 effectiveness of Face IT, a computer-based psychosocial intervention for disfigurement-
668 related distress. *Psychology, Health & Medicine.* 2012;17(5):565-577.
669 **45.** Williamson H, Hamlet C, White P, et al. A Web-Based Self-Help Psychosocial
670 Intervention for Adolescents Distressed by Appearance-Affecting Conditions and Injuries
671 (Young Persons' Face IT): Feasibility Study for a Parallel Randomized Controlled Trial.
672 *JMIR Ment Health.* 2019;6(11):e14776.
673 **46.** Mendelson BK, Mendelson MJ, White DR. Body-Esteem Scale for Adolescents and
674 Adults. *Journal of Personality Assessment.* 2001;76(1):90-106.
675 **47.** Diedrichs PC, Atkinson MJ, Steer RJ, Garbett KM, Rumsey N, Halliwell E. Effectiveness
676 of a brief school-based body image intervention 'Dove Confident Me: Single
677 Session'when delivered by teachers and researchers: Results from a cluster randomised
678 controlled trial. *Behaviour Research and Therapy.* 2015;74:94-104.
679 **48.** Kazis LE, Lee AF, Hinson M, et al. Methods for assessment of health outcomes in
680 children with burn injury: The Multi-Center Benchmarking Study. *Journal of Trauma*
681 *and Acute Care Surgery.* 2012;73(3):S179-S188.
682 **49.** Daltroy LH, Liang MH, Phillips CB, et al. American Burn Association/Shriners Hospitals
683 for Children Burn Outcomes Questionnaire: Construction and Psychometric Properties.
684 *The Journal of Burn Care & Rehabilitation.* 2000;21(1):29-39.

685 **50.** Tompkins RG, Liang MH, Lee AF, Kazis LE, Group M-CBSW. The American Burn
686 Association/Shriners Hospitals for Children Burn Outcomes Program: A progress report
687 at 15 years. *Journal of Trauma and Acute Care Surgery.* 2012;73(3):S173-S178.
688 **51.** Kazis LE, Liang MH, Lee A, et al. The development, validation, and testing of a health
689 outcomes burn questionnaire for infants and children 5 years of age and younger:
690 American Burn Association/Shriners Hospitals for Children. *The Journal of Burn Care &*
691 *Rehabilitation.* 2002;23(3):196-207.
692 **52.** Murphy JM, Kazis LE, Li N-C, et al. Test performance characteristics of a case-finding
693 psychosocial questionnaire for children with burn injuries and their families. *Journal of*
694 *Trauma and Acute Care Surgery.* 2012;73(3):S221-S228.
695 **53.** Gardner W, Lucas A, Kolko DJ, Campo JV. Comparison of the PSC-17 and alternative
696 mental health screens in an at-risk primary care sample. *Journal of the American*
697 *Academy of Child & Adolescent Psychiatry.* 2007;46(5):611-618.
698 **54.** Bergmann P, Lucke C, Nguyen T, Jellinek M, Murphy JM. Identification and utility of a
699 short form of the Pediatric Symptom Checklist-Youth self-report (PSC-17-Y). *European*
700 *Journal of Psychological Assessment.* 2018:No Pagination Specified-No Pagination
701 Specified.
702 **55.** Ranta K, Junttila N, Laakkonen E, Uhmavaara A, La Greca AM, Niemi PM. Social
703 Anxiety Scale for Adolescents (SAS-A): Measuring Social Anxiety Among Finnish
704 Adolescents. *Child Psychiatry & Human Development.* 2012;43(4):574-591.
705 **56.** Harter S. Self-perception profile for adolescents: Manual and questionnaires. *Denver,*
706 *CO: Univeristy of Denver, Department of Psychology.* 2012.

57. Inderbitzen-Nolan HM, Walters KS. Social Anxiety Scale for Adolescents: Normative data and further evidence of construct validity. *Journal of Clinical Child Psychology.* 2000;29(3):360-371.

58. La Greca AM. *Social anxiety scales for children and adolescents: Manual and instructions for the SASC, SASC-R, SAS-A (adolescents), and parent versions of the scales*: AM La Greca; 1999.

59. Lawrence JW, Fauerbach JA, Heinberg LJ, Doctor M, Thombs BD. The reliability and validity of the Perceived Stigmatization Questionnaire (PSQ) and the Social Comfort Questionnaire (SCQ) among an adult burn survivor sample. *Psychological assessment.* 2006;18(1):106.

60. Lawrence JW, Rosenberg L, Rimmer RB, Thombs BD, Fauerbach JA. Perceived stigmatization and social comfort: Validating the constructs and their measurement among pediatric burn survivors. *Rehabilitation Psychology.* 2010;55(4):360.

61. Wilson CJ, Rickwood D, Deane FP. Depressive symptoms and help-seeking intentions in young people. *Clinical Psychologist.* 2007;11(3):98-107.

62. Gulliver A, Griffiths KM, Christensen H. Perceived barriers and facilitators to mental health help-seeking in young people: a systematic review. *BMC psychiatry.* 2010;10(1):113.

63. Heath J, Williamson H, Williams L, Harcourt D. Supporting children with burns: Developing a UK parent-focused peer-informed website to support families of burn-injured children. *Patient education and counseling.* 2019;102(9):1730-1735.

64. Gee C, Maskell J, Newcombe P, Kimble R, Williamson H. Opening a Pandora's Box that can't be salvaged: Health professionals' perceptions of appearance-related care in an Australian pediatric specialist hospital. *Body image.* 2019;31:1-12.

751 **Table 1.** Participant Demographics (N=78)

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	N[1]	*M(SD)*
Age at Survey (*years*)	78	14.84 (1.92)
TBSA (%)	74	17.82 (22.82)
Time Since Burn (*years)*	77	4.54 (5.42)
	N [2]	*%*
Race/Ethnicity		
White/Caucasian	51	68.0
Black/African American	10	13.3
Hispanic/Latino	4	5.3
Asian/Pacific Islander	8	10.7
Other	2	2.7
Burn Location		
Face, Head, or Neck	27	34.6
Hand or Wrist	42	53.8
Other	9	11.5

[1] N of participants with available data
[2] N of participants who fit the categorical criteria reported
Note: Race/ethnicity was available for 75 participants and burn location data was available for all 78 participants.

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768 **Table 2.** Appearance Concerns, Psychosocial Functioning, and Social Anxiety

Appearance Concerns	*N*[1]	*N (%) AC Reported*
Burn Outcomes Questionnaire -Appearance	64	1 (3.1)
Body Esteem Scale for Adolescents	69	44 (63.8)
2-Part Burn Related Appearance Concerns Question	73	25 (34.2)
Psychosocial Functioning: PSC-17 Risk	*N*[1]	*N (%) Risk*
Overall Psychosocial Problems	59	9 (15.3)
Internalizing Symptoms	59	11 (18.6)
Externalizing Symptoms	66	6 (9.1)
Attention Symptoms	66	4 (6.1)
Psychosocial Functioning: Categorical Risk	*N*[1]	*Median (IQR)*
Self-Worth (SPPA)	71	2.80 (1.55)
Romantic Appeal (SPPA)	56	2.70 (1.10)
Social Avoidance to New Situations (SAS-A)	72	14.50 (7.00)
General Distress and Social Avoidance (SAS-A)	75	6.00 (3.00)
Fear of Negative Evaluation (SAS-A)	72	15.50 (10.50)
Life Engagement (BILEQ)	40	1.25 (0.78)
Perceived Stigmatization (PSQ)	67	1.93 (0.55)

[1] N of participants with available data
[2] N of participants who fit the categorical criteria reported
Note: AC= appearance concerns; IQR = Interquartile range

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