DET PSYKOLOGISKE FAKULTET

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Adolescents Needs Regarding a Digital Intervention for Eating Disorders:

A Qualitative Study

HOVEDOPPGAVE

profesjonsstudiet i psykologi

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Biveileder: Guri-Elise Holgersen

Forord

Først og fremst vil vi rette en stor og ydmyk takk til ungdommene som har delt sine opplevelser, perspektiver, tanker og kunnskap med oss. Dere er oppgavens ryggrad, og vi setter umåtelig stor pris på deres ærlighet. Våren 2023 fikk vi muligheten til å ta del i ForHelses UngMeistring-prosjekt, og det har vært en lærerik, engasjerende og spennende læringsprosess. Vi sitter igjen med verdifull kunnskap som vi vil ta med oss ut i arbeidslivet. En særlig takk til vår engasjerende veileder Tine Nordgreen for hennes kunnskap, støtte, og tilstedeværelse i denne skriveprosessen. Din veiledning har vært uvurderlig. Vi vil også rette en stor takk til biveileder Guri-Elise Holgersen for hennes gode innspill, støtte, og råd i analyseprosessen. Ditt ektefølte engasjement for prosjektet har vært smittende.

Tusen takk til gode studievenner, familie og kjæreste for deres tålmodighet og emosjonelle støtte i skriveprosessen. Deres gode humør og omsorg har gjort vårt siste studiehalvår minnerikt.

Til slutt vil vi takke hverandre for utømmelig støtte gjennom lange dager og varierende grad av tro på egne evner. Det er fint å kunne avslutte et 6 år langt studieløp med en følelse av at samarbeid er gull verdt.

Bergen, 09.05.2023

Sara Elisabeth Abdi-Dezfuli og Solveig Friis Darrud

Abstract

*Objective***:** Eating disorders are mental disorders that often have their onset in adolescence and have serious consequences on an individual and societal level. Digital treatments for eating disorders have demonstrated promising results and may increase access to treatment and improve psychopathology. Historical evidence suggests that in order to succeed in the implementation of digital interventions for adolescents, it is important to include the user perspective in the development of new interventions. The aim of this study is to gain insight into adolescents' needs regarding a digital intervention for eating disorders. *Method:* Semi-structured telephone interviews were conducted with six Norwegian female adolescents between the ages of 16-19 years who had undergone treatment for an eating disorder. Data was analyzed using reflexive thematic analysis. *Results***:** We identified three main themes: 1) "Learning while treating oneself" - The importance of trustworthy information about eating disorders, 2) Building inner strength and resilience through skill development, 3) The importance of a personalized intervention - how format and content can motivate use. *Conclusion:* Our findings highlight how user involvement in the development of digital interventions for eating disorders can provide an insight into the potential end user's perspectives and needs.

Keywords: eating disorders, adolescents, digital intervention, person-based approach, reflexive thematic analysis

Sammendrag

Formål: Spiseforstyrrelser er en gruppe psykiske lidelser som ofte opptrer i ungdomsalderen og har alvorlige konsekvenser på et individuelt og samfunnsmessig nivå. Digitale behandlinger for spiseforstyrrelser har vist lovende resultater og kan øke tilgang til behandling og bedre psykopatologi. Tidligere studier antyder at det er viktig å inkludere brukerperspektivet i utviklingen av nye intervensjoner for å lykkes med implementeringen av digitale intervensjoner for ungdommer. Formålet med denne studien er å få innsikt i ungdommers behov knyttet til en digital intervensjon for spiseforstyrrelser. *Metode:* Semistrukturerte telefonintervju ble gjennomført med seks norske, kvinnelige ungdommer som hadde gjennomgått behandling for spiseforstyrrelser. Innsamlet data ble analysert ved hjelp av refleksiv tematisk analyse. *Resultater:* Vi identifiserte følgende tema: 1) "Å lære mens man behandler seg selv"- Viktigheten av troverdig informasjon om spiseforstyrrelser, 2) Bygge indre styrke og resiliens gjennom ferdighetsutvikling, 3) Viktigheten av en personifisert intervensjon- hvordan format og innhold kan motivere bruk. *Konklusjon*: Våre funn belyser hvordan brukerinvolvering i utviklingen av digitale intervensjoner for spiseforstyrrelser kan gi innsikt i perspektiv og behov hos potensielle sluttbrukere.

ADOLESCENTS NEEDS: DIGITAL INTERVENTIONS & EATING DISORDERS

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Study

Eating disorders (EDs) are serious psychiatric diseases associated with significant personal, familial and societal costs (Schaumberg et al., 2017; Treasure et al., 2020). EDs affect an individual's physical and psychosocial wellbeing, and compared to other mental illnesses the disorders are associated with higher mortality rates and poor life outcomes (Levinson et al., 2022; Treasure et al., 2020; van Hoeken & Hoek, 2020). EDs are a group of disorders where disturbed attitudes towards weight, body shape and eating play a key role in the origin and maintenance of the illness (Treasure et al., 2020). EDs can be divided into four main categories; Anorexia Nervosa (AN), Bulimia Nervosa (BN), Binge-Eating disorder (BED) and Eating Disorder Not Otherwise Specified (EDNOS) (Helsedirektoratet, 2017) and it is not uncommon to migrate between the different ED diagnosis (Eddy et al., 2008). Furthermore, EDs most frequently have their onset in adolescence, but a few occur before puberty, and some in adulthood (Helsedirektoratet, 2017; Keski-Rahkonen & Mustelin, 2016). The lifetime prevalence of AN is approximately 0.5%, BN about 1-2%, 2-3% for BED and the prevalence of EDNOS is estimated around 4.7% (Smink et al., 2012; Smink et al., 2013; Keski-Rhakonen & Mustelin, 2016; Hoek, 2016; Le Grange et al., 2012). More females are diagnosed than males, but it is reasonable to assume that prevalence in males is underreported (Lavender et al., 2017). The prevalence of EDs in adolescents has been relatively stable, with EDs presented in 1-3% of adolescents (Breton et al., 2022; Treasure et al., 2020). However, in the aftermath of the COVID-19 pandemic, an increased numbers of adolescents were diagnosed with AN both in Norway and internationally (Surén et al., 2022). This highlights a great need for scalable, relevant and user-friendly interventions for adolescents with EDs.

Risk Factors

The origins of EDs are complex and multifaceted, involving a range of biological, developmental psychological, intrafamilial and sociocultural risk factors that can contribute to both the onset and maintenance of EDs (Barakat et al., 2023; Jacobi et al., 2004).

Biological risk factors such as genetic factors seem to be associated with the development of EDs (Barakat et al., 2023). Family and twin studies as well as large-scale genomic studies have indicated a genetic component to risk of AN, BN and BED (Thornton et al., 2010). Individuals with a parent with a history of ED have been found to have incidence rates twice as high compared to individuals with parents with no history of an ED (Bould et al., 2015)

Developmental risk factors such as certain developmental phases are associated with the risk of developing EDs (Barakat et al., 2023; Treasure et al., 2020). Puberty has been identified as a critical time period for the development of EDs and there is consistent evidence demonstrating that early onset of puberty is linked to increased risk for the development of EDs in both females and males (Barakat et al., 2023; Treasure et al., 2020). Puberty is characterized by physiological, psychological and cognitive changes, leading to the development of a sense of identity and increased independence from parents (Christie & Viner, 2005). Especially females seem to be strongly impacted by the bodily changes experienced during puberty, as it is thought that this moves females further away from the "thin ideal" (Barakat et al., 2023; Klump, 2013).

Among psychological risk factors, certain personality traits such as perfectionism, neuroticism, impulsivity and compulsivity are associated with increased risk of developing EDs (Barakat et al., 2023). Perfectionism (having high standards for performance, accompanied by an overly critical self-evaluation) has been suggested as a particular robust risk factor for EDs, as illustrated in a longitudinal study demonstrating that perfectionism predicted both the onset and maintenance of ED at a 10-year-follow-up (Barakat et al., 2023;

Holland et al., 2013). Furthermore, relative to controls, individuals with EDs show elevated levels of perfectionism (Barakat et al., 2023). Other psychological factors such as low self-esteem, difficulties in emotion regulation and body image concerns have been associated with both the prediction of ED onset as well as maintenance of the illness (Allen et al., 2013; Barakat et al., 2023; Button et al., 1996; Button & Warren, 2002; Fairburn et al., 1993; Halmi et al., 2005; Monell et al., 2018; Shafran et al., 2002). In a meta-analysis, researchers concluded that low self-esteem acts as a universal risk factor for different EDs (Colmsee et al., 2021). Findings from a study comparing ED-patients to a non-clinical sample demonstrated how individuals with EDs showed impaired abilities to experience and differentiate between different types of emotions, as well as limited ability to suppress and modify emotional activation (Brockmeyer et al., 2014).

Intrafamilial factors such as high parental demands, emotional reactivity, low family involvement, relational trauma, negative family history for EDs and family history of psychiatric disorders are associated with risk of ED development (Del Casale et al., 2022; Barakat et al., 2023).

Sociocultural risk factors are associated with both the onset and maintenance of EDs (Barakat et al., 2023; Helsedirektoratet, 2017; Keel & Forney, 2013). Peer environments where one is particularly occupied with body size, thin-ideals and dieting seem to be associated with risk of EDs (Keel & Forney, 2013). Furthermore, exposure to bullying or negative comments about body or weight is linked to an increased risk of EDs (Barakat et al., 2023; Haynos et al., 2016). How society's ideals of beauty, particularly linked to ideals of thinness, are communicated both directly and indirectly through peers, friends, family and different media platforms can contribute to unhealthy ideals of thinness and body dissatisfaction which in turn can increase the risk of the development of EDs (Barakat et al., 2023; Keel & Forney, 2013; Stice et al., 2017).

Comorbidity

Comorbidity is common in EDs and has the potential to increase the burden of the illness (van Hoeken & Hoek, 2020). In a review including 202 studies related to psychiatric and medical comorbidities, anxiety disorders were the most prevalent psychiatric comorbidity (up to 62%) followed by mood disorders (up to 54%), and substance use and post-traumatic stress disorders (both being up to 27%) (Hambleton et al., 2022). Also, associations between EDs, personality disorders, self-harm and neurodevelopmental disorders were noted in the review (Hambleton et al., 2022).

Consequences of Eating Disorders

EDs can have severe physiological, psychosocial and societal consequences (Treasure et al., 2020). The negative impact EDs have on health is most often caused by physiological effects of behaviors that sustain the illness, such as restricted or selective eating, purging and over-exercising (Datta et al., 2023; Modan-Moses et al., 2003; Olmos et al., 2010). These behaviors may lead to bradycardia, hypertension and orthostatic hypertension (Datta et al., 2023; Modan-Moses et al., 2003; Olmos et al., 2010). 50% of mortality cases in individuals with AN are linked to cardiac arrest, while suicide seems to be the cause for the other 50% (Birmingham et al., 2005; Datta et al., 2023).

EDs are associated with psychosocial consequences (Treasure et al., 2020). For instance, EDs have impacts on the individual's quality of life (Hart et al., 2020; Tomba et al., 2019; de Vos et al., 2018). de Vos and colleagues (2018) demonstrated that patients with EDs had significantly worse scores related to well-being than the general population overall, as well as lower scores in emotional, psychological and social well-being (de Vos et al., 2018). EDs are associated with atypical social functioning, and individuals with EDs experience more interpersonal difficulties with friends compared to non-clinical samples (Harrison et al., 2011; Sharpe et al., 2014; Tchanturia et al., 2013). Caregivers and siblings of patients with

ED are also affected by the disease (Fox et al., 2017; van Hoeken & Hoek, 2020; Yao et al.,

2016). A meta-synthesis identified how caring for and living with an individual with an ED

impacted relationships, emotional and physical health, functioning and finances (Fox et al.,

2017).

EDs have high societal costs (Stokke et al., 2022). In Norway, 26 billion NOK in total

societal costs are linked to EDs, as a result of the burden of disease, reduced quality of life,

mortality, production loss and cost for health- and care services (Stokke et al., 2022).

Treatment

Family-based treatment (FBT) is the recommended treatment for children and

adolescents with EDs, as highlighted in The Norwegian clinical guidelines (Couturier, 2013;

Helsedirektoratet, 2017). The goal of FBT is to strengthen parents' position and power of

action, enhancing their self-efficacy, thus enabling them to work as a resource for their child

by actively participating in their treatment (Lock & Le Grange, 2005; Rienecke, 2017;

Torsteinsson et al., 2021). Several studies have demonstrated that treatment for EDs is more

effective with parental involvement (Le Grange et al., 2007; Lock et al., 2010; Rienecke,

2017; Couturier, 2013). The efficacy of FBT has been reported in several randomized

controlled trials (RCT) (Fairburn et al., 2008; Le Grange et al., 2007; Le Grange et al., 2015).

FBT is delivered in phases (Rienecke, 2017; Torsteinsson et al., 2021). In phase one, the goal

is to enable the parents to intervene in their child's nutritional situation and create a safe

somatic development, and psychoeducation about eating disorders is a crucial part of this

phase (Helsedirektoratet, 2017; Rienecke, 2017). In phase two, the focus lies on gradually

giving back control over meals to the adolescent (Helsedirektoratet 2017; Rienecke, 2017). In

phase three, the family receives further support in empowering their child's independence, as

well as focusing on general challenges within the family that may impact the maintenance of

the ED (Helsedirektoratet, 2017; Rienecke, 2017; Torsteinsson et al., 2021).

Enhanced cognitive behavioral therapy (CBT-E) is currently the preferred treatment for adults with ED, as stated in clinical guidelines in Norway and internationally (de Jong et al., 2018; Fairburn, 2008; Helsedirektoratet, 2017; National Institute for Care and Excellence [NICE], 2020). CBT-E is based on a transdiagnostic theory of the maintenance of EDs, where it is assumed that several of the mechanisms underlying EDs are common to all EDs, as opposed to being specific to each diagnostic group separately (de Jong et al., 2018; Fairburn et al., 2003). Central to the theory is the idea about a dysfunctional evaluation of self-worth based on body shape and weight (de Jong et al., 2018; Fairburn, 2008). Consequently, CBT-E utilizes various strategies and procedures to address this over-evaluation of body shape and weight by targeting these mechanisms (de Jong et al., 2018). Psychoeducation is an integral part of CBT-E, where education is provided about different aspects of the disease (Murphy et al., 2010).

The National institute for Health and Care Excellence (NICE) recommends CBT-E for EDs in children and adolescents when FBT is contraindicated, unacceptable or ineffective (NICE, 2020; Dalle Grave et al., 2019). The same recommendation is given in the Norwegian clinical guidelines in particular situations, including instances of high levels of conflict in the family (Helsedirektoratet, 2017). CBT-E has been adapted for an adolescent patient population showing promising effects as a transdiagnostic intervention (Dalle Grave et al., 2013; Dalle Grave et al., 2015; Dalle Grave et al., 2019).

Barriers to Help-Seeking and Recovery

It is estimated that only 23% of individuals meeting ED diagnostic criteria actually seek treatment, making the identification and treatment of individuals with EDs challenging (Eisenberg et al., 2011). The perceived barriers to treatment-seeking include factors such as social stigma and shame, denial or failure to perceive the severity of the ED symptoms, practical barriers such as access to treatment and negative attitudes towards treatment (Ali et

al., 2017; Hamilton et al., 2022). Barriers to treatment access have been linked to factors such as cost and geographical distribution of services (Kazdin et al., 2017). There is often a substantial delay between the onset of the illness and treatment seeking (Hamilton et al., 2022). This delay may result in negative consequences for individuals with EDs since the duration of illness is known to be a key predictor of poor outcome in EDs (Steinhausen, 2002).

For those seeking treatment, achieving recovery is challenging due to several complex factors (Abbate-Daga et al., 2013; Fassino & Abbate-Daga, 2013), as more than 50 % experience relapse (Khalsa et al., 2017). Ambivalence is a common experience in this patient group, where patients may have a desire for treatment but are reluctant to get well, as it may involve the loss of symptoms that are experienced as positive (Gagnon-Girouard et al., 2019; Nordbø et al., 2006). Thus, as the individual does not perceive themselves as ill or in need of treatment, the initiators of treatment are often the family or caregivers (Fox et al., 2010; Guarda et al., 2007). EDs are often described as ego-syntonic, and consequently positive value may be associated with the symptoms (Fox et al., 2010). For instance, ED can give an increased experience of self-confidence, sense of safety and sense of meaning (Gagnon-Girouard et al., 2019; Marzola et al., 2016; Serpell et al., 1999). EDs also seem to have an emotion-regulating function (Brockmeyer et al., 2012; Wildes et al., 2010) as well as a means to experience a sense of control over different areas of life (Gregertsen et al., 2017). Recent years have emphasized the recognition of how ED symptoms may become habitual over time (O'Hara et al., 2015), suggesting that reducing ED symptoms and accompanying behavior patterns will be increasingly difficult as time goes on.

Despite CBT-E being the gold-standard treatment for EDs (Fairburn, 2008) the response rates are only 50%, and up to 35% of those who remit eventually relapse (Carter et al., 2012; Keel et al., 1997; Keel et al., 2005; Levinson et al., 2021; Strober et al., 1997).

Additionally, less than 40% of adolescents hit remission at the end of a course of standard FBT (Le Grange et al., 2021). Most traditional treatments such as FBT and CBT-E are based on "average symptom presentation" related to weight and shape (Levinson et al., 2021; Levinson et al., 2022). However, individuals with EDs are a highly heterogeneous group with only half of individuals with EDs experiencing average symptoms related to weight and shape (Levinson et al., 2021). This highlights the need for more accessible, personalized treatment options tailored to the end-users.

Digital Interventions for Eating Disorders

The severity of the consequences of EDs highlights the importance of the availability of effective and scalable treatment options (Treasure et al., 2020). Prevention programs as well as early detection and intervention may be associated with significant benefits from a public health perspective (Bauer & Moessner, 2013). In this respect, using digital solutions when targeting mental health concerns in adolescents can have multiple advantages (Bauer & Moessner, 2013; Haderlein, 2022; Schlegl et al., 2015). For instance, results from a scoping review aiming to determine the types of technology used for ED treatment in youth and their effectiveness demonstrated that technology-based intervention showed promise for treatment of EDs in youths (Dufour et al., 2022).

Digital interventions can potentially integrate education, prevention and information concerning EDs, whilst being used for early detection and intervention (Bauer & Moessner, 2013). Preliminary evidence suggests that digital interventions show high acceptability among users (Bauer & Moessner, 2013; Kasson et al., 2021). In addition, digital interventions may help increase accessibility by being attainable anywhere and at all hours via phone or the computer, whilst allowing the user to maintain a greater level of anonymity (Bauer & Moessner, 2013; Haderlein, 2022; ter Huurne et al., 2015). As a result, digital interventions could potentially reach users who would not otherwise be seeking help (ter Huurne et al.,

2015). Digital interventions for EDs are considered useful in increasing motivation for change (Hötzel et al., 2014), reducing ED's pathology and relapse (Aardoom et al., 2013; Haderlein, 2022; Schlegl et al., 2015; Taylor et al., 2021). For instance, a meta-analysis showed promising results in reduction of ED-symptoms with a web-based intervention using cognitive behavioral therapy (CBT) and guided self-help (Haderlein, 2022). Results from a two-arm open RCT comparing web-based CBT-intervention to a waiting list control condition among patients with EDs showed that web-based CBT was effective in reducing ED-psychopathology in participants with EDs in comparison to the waiting list control group (ter Huurne et al., 2015).

The use of digital interventions in mental health care has the potential of being a cost-effective way to prevent and treat mental illness (Haderlein, 2022; ter Huurne et al., 2015). The World Health Organization (WHO, 2016) recommends prioritizing technological solutions when developing and/or further developing mental health care. Furthermore, the Norwegian government has emphasized the possible value of using technology in health care services (Meld. St. 7 (2020-2023), p. 3).

However, once implemented, digital interventions frequently have limited reach and suboptimal engagement (Graham et al., 2019). The concept of reach describes whether the intervention actually reaches its target population. "Uptake" refers to "how many individuals offered an intervention actually begin it (e.g., open the first screen of a guided self-help intervention)" (Taylor et al., 2019 p. 1225). "Engagement" describes whether the individual engages with the treatment or tool continually over time (Taylor et al., 2019; Weissman et al., 2020). For instance, two separate initiatives aimed at implementing online screening and intervention for EDs on university campuses in the USA, less than 3 % of the student body completed screening (Fitzsimmons-Craft et al., 2019a; Fitzsimmons-Craft et al., 2019b).

Similar results were demonstrated for an internet-based ED-intervention in Ireland

(Lindenberg et al., 2011).

User-Centered Approaches

One of the reasons for limited reach and engagement in digital interventions is that the

interventions are not designed for the end-users and the contexts in which they will be

implemented (Lyon et al., 2016; Mohr et al., 2017; Mohr et al., 2018). This was demonstrated

in a clinical review of mental health smartphone applications where the primary reason for

low engagement was the application design. This review highlighted how many apps are not

created with the target users in mind, thus failing to address the problems that users find most

important (Torous et al., 2018). A common error often seen is the conversion of evidence-

based, manualized treatments into a digital format with the assumption that they will yield the

same outcomes (Graham et al., 2019). When designing a technology-assisted service, one

needs to be attentive to the subjects receiving the services (such as patients), those who

administer the service (e.g., care givers) and other stakeholders who may be affected by the

service, as their involvement with the service affect reach and engagement (Graham et al.,

2019). When addressing issues with reach, uptake and engagement, a comprehensive grasp of

how people interact with technology is needed to guide the design and development of digital

interventions for EDs (Graham et al., 2019).

A user-centered approach to the development of an intervention highlights the

importance of including the target group in all stages of developing the intervention to ensure

engagement, adherence and commitment (Bevan Jones et al., 2020; Yardley et al., 2015). The

Person-Based Approach (PBA) developed by Yardley and colleagues (2015) highlights the

importance of involving the target group in planning and developing interventions in order to

understand and accommodate their perspectives.When creating digital interventions aimed at

children and adolescents, there are different considerations to make compared to the

development of interventions aimed at adults (Bevan Jones et al., 2020). The reason for this is that one must account for age and developmental differences, as well as potentially different symptoms and coping strategies in children and adolescents (Bevan Jones et al., 2020).

The aim of this study is to gain insight into adolescents' needs regarding a digital intervention for EDs. This is in line with user-centered approaches, such as the PBA-framework in the development of digital interventions.

Method

Scientific Context

This study is part of the Forskningssenter for Digitale Psykiske Helsetjenester (ForHelse, n.d.). UngMeistring project (2022-2026), which is funded by the Norwegian Research Council. The project is a collaboration between DigiUng (Directorate of Health), Helse Bergen, Helse Fonna, Helse Stavanger, Helse Vest IKT, Sykehuset Nord-Norge, University of Bergen (UiB), Bømlo municipality, YouWell AS, SkillUP AS and Attensi AS. The project is led by Kristin Bruvik and Tine Nordgreen at Helse Bergen. The overall goal of the project is the development of eight web- and game-based self-help and treatment programs for youth and adolescents, available to the public, primary and specialist health services. UngMeistring is in the process of developing programs aimed at youth and adolescents with anxiety, ADHD, depression and eating disorders (ForHelse, n.d.)

More specifically, this study is a part of an ongoing PhD project (Guri-Elise Holgersen, "Development and evaluation of a unified digital treatment for adolescents with eating disorders"). The current study will serve as a subpart of this project.

Methodological Framework

The Person-Based Approach developed by Yardley and colleagues (2015) is considered as a methodological framework consisting of different methods and instruments in the creation of effective and motivating health-related interventions. The main goal of PBA is

to create interventions that can cater to perspectives and needs of the users, as this is considered essential to increase the interventions effectiveness, uptake and engagement (Yardley et al., 2015). Thus, PBA is incorporated in the development of interventions in different ways (Yardley et al., 2015).

First, the planning stage of the development consists of an initial, extensive background literature search in addition to a qualitative assessment of the intervention on the target population (Yardley et al., 2015). Both the qualitative evaluation and literature search are of equal importance in PBA, as they shed light on guidance regarding which components are important and how they may be optimally implemented in specific contextual settings (Yardley et al., 2015). PBA offers a transparent and thorough process for the evaluation of the target population's perspectives, opinions and needs in a contextual setting (Yardley et al., 2015). In addition, this process allows for the identification of specific components of the intervention that are most likely to be appreciated and executed by the end-users. At the same time, one also avoids incorporating elements that are impractical or undesired (Yardley et al., 2015).

Secondly, insight from this analysis is used to formulate guiding principles for intervention development (Morrison et al., 2018). These guiding principles may be used throughout both the planning and developmental stage of the intervention, thus securing a coherent focus in the overall development. As part of the guiding principles, objectives of the intervention are described in the form of actions and intervention-features that are essential for end-user accommodation (Morrison et al., 2018; Yardley et al., 2015). Both elements (action and intervention-features) are identified by the use of qualitative research, with the aim being the promotion of user engagement. The descriptions of important intervention features explain how the design objectives can be achieved practically (Morrison et al., 2018).

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Thirdly, the PBA framework is also useful in the optimization of interventions. In this process, qualitative or mixed-method research is utilized to gather feedback from the end-users. This can give valuable information about the individual's perspectives and experience with a pilot intervention. Based on the feedback, interventions can be modified accordingly. Furthermore, to confirm that the intervention and associated behavior change have achieved the desired effect, further research is conducted. Simultaneously, the guiding principles can be refined in tandem with a deeper insight into the experiences and motivations of the target users to secure intervention optimization (Morrison et al., 2018; Yardley et al., 2015)

Design

The current study utilizes a qualitative research design, as qualitative methods are especially suitable when seeking to explore human characteristics, such as their experiences, perceptions, thoughts, motives and attitudes (Malterud, 2018). In order to gain insight into the participants' unique experience and interpretations, semi-structured interviews were used as a data collection method (Marshall & Rossmann, 2006). When using semi-structured interviews, an interview guide is formulated ahead of the interviews to provide structure, whilst also allowing unscripted follow-up questions. This allows further expansion of the participants perspectives (Marshall & Rossmann, 2006).

Prior to our engagement in the project, the project team developed a semi-structured interview guide (Appendix A). First, the interview guide provided an informative section regarding the project. Following this, the interview guide consisted of a combination of closed and open-ended questions to explore three main themes: 1) The users' knowledge and experience with digital treatment, 2) The users' needs regarding a digital treatment, and 3) The users' interest in digital treatment. The questions formulated in the interview guide provided a template for relevant topics regarding the research aim, whilst allowing for further exploration when it was deemed appropriate.

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Procedure

Recruitment was conducted between November 30 and December 20th, 2022. Information about the study was communicated to the public in different ways. First, information posters (Appendix B) were posted at high schools in the Bergen city area, where readers were encouraged to enlist in the study if they had experience with treatment for AN, BN and/or BED. Contact information for the study team was listed, and readers were encouraged to contact them if they had questions regarding the project. The posters also informed the reader that participants in the study would receive a gift card of 300 NOK. The participants had to contact the study team themselves to uphold ethical principles and legal confidentiality.

No participants volunteered through the posters. As a result, social media (Instagram and Facebook) was used to share the same recruitment materials. This time, the posters had an accompanying QR code which led readers to a website concerning the study. From the website the participants were directed to an online screening connected to the project groups' website. The online screening consisted of questions to ensure the potential participants met the inclusion criteria of the study. The inclusion criteria included: a) access to a phone, tablet or computer, b) the ability to speak and read Norwegian, and c) having undergone treatment for EDs (AN, BN and/or BED) within the past five years. If the adolescent were still undergoing treatment, this should be in a concluding or stable phase. Exclusion criteria included: a) being in active inpatient treatment, b) ongoing manic phase or psychosis, and c) ongoing addiction issues and pervasive developmental disorder. Participants eligible for the study were asked to leave their name and number in order for the study team to contact them.

The next step in the recruitment process involved a telephone screening, where a member of the project team contacted the participants to further ensure that the inclusion and exclusion criteria were covered. During the telephone screening, a date and time were set for

the following interview. Lastly, the participants were given access to an online consent form with more information about the project. The consent form was signed using an electronic signature, BankID (security level 4).

The target population consisted of adolescents and young adults between the ages of 16 and 19 who fit the inclusion criteria of having undergone treatment for the previously mentioned EDs. The sample in this study can be considered a convenience sample, as the study was first announced, and participants self-selected if they wanted to participate (Stratton, 2021). When conducting an analysis of qualitative interviews, Guest and colleagues (2006) recommends minimum 12-16 participants. As a result, recruitment was terminated after 20 participants had expressed interest. Two participants dropped out in the time between the phone screening and the scheduled interview, whilst two participants rescinded their participation before the phone screening took place. As a result, the final sample consisted of 16 participants. In the current study, a convenient subsample of 6 participants was utilized. The selection of participants to our subsample was based on availability (when it was most convenient for the participants to conduct the interview).

Data Collection and Data Transcription

In order to test and become familiar with the interview guide, we conducted a pilot interview. Our experiences were discussed with our supervisors, and they provided input regarding our interview techniques. As a result of us being two separate interviewers, we sought to reduce discrepancies in our interview style through guidance from our supervisors.

To ensure recruitment we conducted the interviews over the phone, with the interviewers being in ForHelse's facilities at Haukeland Hospital. The interviews took approximately 25-30 minutes. Using this approach, the adolescents could carry out the interviews in an environment they felt comfortable in and reduce the time they needed to set aside to participate in the study. In addition, reflections regarding possible stigma associated

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with the disease contributed to the hypothesis that a physical interview could be perceived as scary. In line with this, telephone interviews were deemed the most appropriate method for data collection.

Audio recordings of the interviews were made using a tape recorder and stored on a secured server at Helse Bergen before being used for transcription. Transcriptions of the interviews were conducted during January 2023. We developed guidelines for transcribing the interviews along with our co-supervisor Guri-Elise Holgersen as they were to be a part of her PhD-project. We wished to communicate the content of the interviews as accurately as possible. Perceived superfluous filler words such as "like", "kind of", and "uhm" were removed when it was deemed that they did not serve a purpose, but kept in when they provided important information, such as nervousness or hesitation. Furthermore, pauses and laughter were included in the transcription when they occurred. We transcribed the interviews we had carried out ourselves. After both having transcribed our first interview, we read each other's first transcribed interview and discussed similarities and discrepancies. This was done to ensure that our transcriptions were as similar as possible.

Analysis

In the current study, we used a Reflexive Thematic Analysis (RTA) as described by Braun & Clarke to analyze our data material (Braun & Clarke, 2006; Braun & Clarke 2021; Braun & Clarke, 2022). Thematic Analysis (TA) is a theoretically flexible method that can be applied using various research approaches (Braun & Clarke, 2022). The term reflexivity describes that the researcher takes ownership of how they are situated within the research, as well as how this may have implications for the choices made when designing the study and how the data is analyzed (Berger, 2015). The researcher actively and transparently reflects on their position in relation to different aspects of their life such as personal, functional and disciplinary viewpoints (Braun & Clarke, 2022). Braun and Clarke view "researcher

subjectivity, and the aligned practice of reflexivity as the *key* to successful reflexive TA"

(Braun & Clarke, 2022, p. 12). Thus, the researchers' subjectivity is brought into every part of

the project they work on.

Reflexivity

This study was conducted as a thesis in the final semester of our professional

education in psychology. Our interest in adolescents and ED-treatment is multifaceted. We

developed an increasing interest and engagement in the field of EDs during our education. We

acquired basic knowledge of the complexity of EDs, including the etiology of EDs and

different interventions and treatment options regarding EDs. During our intern clinical

internship, we gained practical experience working with individuals with EDs. Furthermore,

one of us has worked for four years in a general psychiatric inpatient unit meeting several

patients with severe cases of EDs. She has personal experience with EDs and has undergone

CBT-E treatment for EDs in her late adolescent years. The other has worked for two years in

a youth and adolescent psychiatric ward, where many adolescents were admitted due to EDs.

When the covid-19 pandemic struck in the spring of 2020, we experienced an

increased interest in the access and availability of treatment. We therefore note that our

particular interest and focus on digital interventions during the years of the pandemic may

have been significantly influenced by the media exposure of children and adolescents with

severe EDs who experienced a lack of access to health care. Thus, as a result of the observed

increase in young people seeking treatment for EDs whilst being met with long waiting lists, a

further emphasize on the importance of digital intervention was made for both of us.

The Six Phases of Reflexive Thematic Analysis

RTA, as described by Braun and Clarke, consists of six phases: "1) data

familiarization and writing familiarization notes; 2) systematic data coding; 3) generating

initial themes from coded and collated data; 4) developing and reviewing themes; 5) refining,

defining and naming themes; and 6) writing the report" (Braun & Clarke, 2021, p. 331). Braun and Clarke (2022) clearly state that these phases should not be used as rigorous guidelines for a linear process. Instead, they propose an understanding of the phases as stages in a process, where the researcher can navigate between the stages in accordance with what makes sense within their research project (Braun & Clarke, 2022).

In the current study we used an inductive approach to our data material, meaning that the data forms the basis for the analytical process. Consequently, the data material has been analyzed without the attempt to fit it into pre-existing theories or frameworks (Braun & Clarke, 2022).

Phase 1: Familiarizing Yourself With the Dataset. The first phase in RTA includes emerging yourself in the dataset (Braun & Clarke, 2022). The goal is to become intimately familiar with its contents and gain a deeper understanding of the dataset (Braun & Clarke, 2022). The familiarization process consists of engaging with the data in an active and critical manner, by reading and re-reading your data, writing brief notes and highlighting ideas for later data coding (Braun & Clarke, 2022). In RTA, this phase is meant to "make meaning of the world that has been presented to you in your data, to develop potential patterns of meaning" (Braun & Clarke, 2022, p. 43).

First, we read the transcribed interviews along with our co-supervisor to deepen our understanding of the data material. The act of transcribing the interviews also allowed further familiarization with their content. Secondly, we re-read the data material whilst using a reflexive diary to record our thoughts, feelings and impressions. We then printed the interviews on paper which provided a deeper sense of intimacy with our data. Thirdly, we discussed our notes and experiences in line with how our personal and professional experiences, interpretations and feelings may have influenced our understanding of the interviews. The differences and similarities that became clear during this discussion phase

were noted in our reflexive diary. It became clear that our notes had many similarities, although wording could differ. We experienced that our understanding of the underlying meaning of the data material often corresponded. This was further reflected upon, and we discussed how us undergoing the same education, as well as working with patients with EDs may have contributed to this correspondence. However, we also found that we highlighted different points or drew out meaning from parts of the text that the other person had missed.

Phase 2: Generating Codes. When generating codes in RTA, the goal is to capture and highlight important, meaning-bearing features of the data material (Braun & Clarke, 2022). Coding is described as a subjective process of making meaning of the data, which will inevitably be influenced by the researcher. Consequently, different coders will make meaning of the data in different ways (Braun & Clarke, 2022). When there are multiple coders, the goal is not to arrive at a completely matching codebook, but to work together in order to gain a more rich and complex understanding of the data (Braun & Clarke, 2022).

In addition, coding in RTA can be conducted on different meaning-making levels. A semantic approach to coding means that you deal with the explicitly expressed content of meaning in the data set. A latent approach to coding involves a deeper, more implicit and/or conceptual focus when extracting meaning from the data set (Braun & Clarke, 2022). These approaches are not mutually exclusive and can be used in combination. Braun & Clarke (2022) express that they should be thought of as two ends of a spectrum.

When coding the interviews, we used the computer program NVivo (version 12) as technical support. To ensure a consistent analytical focus we started the process by separately coding the same interview. We then received feedback and guidance from our co-supervisor regarding coding technique and coding style. Initially, we made a conscious choice to use a semantic approach to coding in order to prevent premature engagement in theme generation.

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However, whilst coding the first interview, we experienced that some parts of the data could be best represented through a latent approach to coding.

We coded each interview individually. To ensure that we did not exclude potential categories and themes, we coded the data material extensively by including all meaningful segments. Some segments were coded in one singular code, whilst others were included in multiple codes. When we had concluded coding all six interviews, we collectively reviewed our codebooks. At this stage, we had 214 and 203 codes respectively. After searching for similarities and differences in the codebooks, including revising the code names and examining the segments coded within, we created a collective code book with 210 codes. At this stage, we reflected upon how the scientific context could have influenced our initial analytical focus. We found it important to acknowledge that this study is part of a larger project aimed at developing a digital intervention for adolescents with EDs. This may have influenced our initial analytical focus and subsequently the formulation of our research question. However, as the analysis progressed, a clearer analytical focus for our study emerged. Our analytical focus narrowed to the *needs* of adolescents in a digital intervention for EDs.

Phase 3: Generating Initial Themes. In phase 3, the analysis begins to take shape, moving away from the smallest units of meaning (codes) towards larger, meaningful patterns (themes) (Braun & Clarke, 2022). However, it is important to note that the development of final themes comes in later stages of the analysis (Braun & Clarke, 2022).

In this phase we worked with the intention of exploring areas of shared meaning and consequently experienced that our analysis and coding process became increasingly influenced by a latent approach. We organized potentially related codes into candidate themes using color codes in NVivo (version 12). For instance, all codes reflecting a need for information were grouped together, allowing a more clear and visual representation of our

data. In turn, this functioned as an important foundation for further theme development. In all stages of this process, we reflected on our interpretive role and actively checked our interpretations of meaning and code names against the original text.

Phase 4: Developing and Reviewing the Themes. In phase 4, candidate themes are checked against the coded data as well as the entire dataset (Braun & Clarke, 2022). A theme should reflect a central, organizing concept that can be related to the dataset, research question, and a broader context (Braun & Clarke, 2022). The further development of themes is a central part of phase 4. The researcher moves away from the dataset with the main focus being on the created codes. Thus, it is important to review the dataset once again, as this may result in a deeper and/or new understanding of segments from the dataset (Braun & Clarke, 2022).

We discussed our thematic outline with our supervisors to get feedback and guidance. To ensure that our codes represented the same underlying meaning, we reviewed all the codes organized under the same candidate themes in the thematic outline. We then revised the thematic outline, by merging and discarding some candidate themes. Furthermore, despite the fact that our candidate themes represent a shared content of meaning, we experienced that there were distinctive aspects within our themes that were best represented by the use of sub-themes. In the identification of relationships and patterns in the dataset, we made use of mind maps while reviewing the dataset. The mind maps further increased our insight into the meaning of the data, leading to the revision of theme names and the re-organization of themes. Phase 4 and 5 overlapped in many ways, resulting in a process where we moved between them interchangeably.

Phase 5: Refining, Defining, and Naming Themes. In phase 5 the themes further develop as one engages in more fine-tuned analytical work (Braun & Clarke, 2022). This includes writing short descriptions of each theme to ensure that the theme reflects a central

organizing concept. If writing short descriptions of the theme is difficult, Braun & Clarke (2022) suggests that the theme is in need of further processing. Additionally, one should evaluate whether the theme has clear boundaries of what is included and not, whether each theme represents something unique and specific, and that the theme contributes to the overall analysis (Braun & Clarke, 2022).

To ensure that each theme reflected a central organizing concept, we wrote individual descriptions of each theme. Following this we engaged in discussions regarding our understanding of what the themes represented, and whether or not they needed further processing. This process was useful in the development of theme names and the creation of subthemes. To ensure that our theme names gave a true representation of the codes included, we used mind maps where each code was organized under the corresponding theme name. Furthermore, we reviewed the codes included in each theme and the data segments within to make sure that we had not misrepresented the content of the codes, and that they shared the underlying meaning of the theme. At this point our themes were: "The need to learn skills in order to feel secure", "Learning while treating oneself: the importance of evidence-based information on eating disorders, "The need for motivation to complete treatment", and "The need for support, skills, and a functional app to navigate life more easily".

Phase 6: Writing Your RTA Rapport. The final stage of RTA consists of writing your rapport, and Braun & Clarke (2022) express that the analysis takes shape through the writing process. Consequently, writing your rapport is an important step in further developing the reflexive analysis. It provides the researcher a final opportunity to refine the analysis (Braun & Clarke, 2022).

During the writing process, we experienced that the theme "Need for support, skills and a functional app to navigate life more easily" could be incorporated into other themes. Furthermore, based on feedback from our supervisors and our own reflections, we found that

the names of our themes and sub-themes needed refinement. This resulted in new names for our themes and subthemes: *1) "To learn while treating oneself"- The importance of trustworthy information about eating disorders*, *2) Building inner strength and resilience through skill development*, and *3) The importance of a personalized intervention - how format and content can motivate use.*

Ethical Considerations

The project team submitted an application to the Regional Committees for Medical and Health Research Ethics in Norway (REC) prior to our entry to the ForHelse UngMeistring project. However, REC defined the project as health service research ("helsetjenesteforskning"), and the project was consequently considered to be outside their mandate.

Adolescents with EDs can be considered a vulnerable group. Consequently, it was important to conduct an ethical evaluation of this project and its procedures. The Declaration of Helsinki states that research on vulnerable groups and individuals can be necessary in order to improve knowledge about causes, consequences and effects of diseases, as well as improve preventive, diagnostic and therapeutic interventions (World Medical Association [WMA], 2022). During such processes it is the researchers' duty to protect the life, health, dignity, integrity, right to self-determination, privacy and confidentiality of their participants (WMA, 2022). In line with this, medical research involving human participants must only be conducted if the importance of the objective outweighs the potential risks and burdens to the participants (WMA, 2022). Thus, the project proposal was prepared in line with Helse Bergen's guidelines for ethics and privacy considerations, which upon submission concluded that the project had few and small risk factors for the participants, and that the benefits of participation exceeded the risks.

In the current study, all participants signed a consent form prior to participation and they were anonymized to ensure confidentiality and privacy. Telephone interviews were conducted in private rooms at the office of ForHelse to ensure confidentiality and privacy. As some of the topics in the interview could be challenging to discuss, our supervisor was available in a separate room during the interviews. In this way, she could be of assistance if difficult situations should arise. At the start of each interview, all adolescents were asked if they were located in a safe space where they could talk freely. If identifiable information appeared during the interviews, this was anonymized or deleted during transcription. As the interviews were conducted by telephone, we were aware of signs that suggested the participants experienced discomfort, such as long pauses, nervous laughter or changes in tone of voice. If this happened, the participants were offered breaks during the interviews. As perfectionism is a trait that can characterize this group, we emphasized repeatedly that there were no right or wrong answers.

Results

The purpose of this study is to gain a deeper insight into adolescents' needs regarding a digital treatment for EDs. Through RTA, we arrived at three main themes: *1) "To learn while treating oneself"- The importance of trustworthy information about eating disorders, 2) Building inner strength and resilience through skill development, and 3) The importance of a personalized intervention - how format and content can motivate use.*

1. "To Learn While Treating Oneself"- The Importance of Trustworthy Information About Eating Disorders

This theme addresses the adolescents' expressed need to learn about various aspects of EDs with the aim of gaining an increased understanding of themselves and their own illness. Several of the adolescents expressed and emphasized the need for reliable and trustworthy information as a means to counteract misinformation from different sources. Additionally, all

of the adolescents expressed a need and desire to learn more about EDs, including the

consequences it may have on different areas of life. As many adolescents had experiences of

their ED impacting their family, they highlighted a need for information about EDs directed

towards parents. As a result, three subthemes were formulated: *1) Need for information I can

trust, 2) The need for information about the consequences of an eating disorder, 3) The need

for information directed towards parents to ensure their involvement.*

1.1 Need for Information I can Trust

All adolescents highlighted a need for reliable and trustworthy information about EDs.

They described finding it challenging to have access to a myriad of information, thus making

it difficult to navigate in terms of what information could be considered reliable or not. One

adolescent described how she experienced the internet as a scary place because of the

possibility to misinterpret untruthful information: " "To me, the internet is super scary,

because a lot of the information given is incorrect and can be misinterpreted" (ID 4). The

media's portrayal of "healthy eating" was also described as something that could be perceived

as harmful and unfortunate:

> Because with eating, food and calories, you get this idea, like from the media, about
>
> diets where you should eat 1200 calories a day, when in reality you need much, much
>
> more as a child and a young person. And then you've changed your mindset into "it's
>
> just like that, it's just like that" (ID 1).

Many of the adolescents expressed how it could be easy to believe that they had a lot

of knowledge about EDs during their illness. This was often described as a result of them

seeking out information about the condition from different sources. At some point they were

no longer able to distinguish between fact-based knowledge and misinformation about the

disease. One adolescent described the need for correct information about various aspects

relating to EDs: "I think it's important to include [knowledge about eating disorders in a

digital intervention]. Because you might believe that you know a lot because you're in it yourself, but it's smart to include what's actually correct" (ID 2). Another adolescent described how it might be normal to acquire information from different sources when having an ED:

> I think it's actually quite important to include [knowledge about eating disorders] even though you believe that you might have a lot of previous information, because when you have an eating disorder you often tend to get a bit of information from different places [short thinking break] and like, kind of, reflect on it (ID 1).

To solve the problem of having access to an overwhelming amount of information, one adolescent suggests a collection of relevant, trustworthy information in one place:

> Because it's very easy to just google, and you get 1700 answers, but if you had an app or a website where you could insert what applies to you so you don't have to see a thousand different things about eating disorders that isn't necessarily the one you're struggling with or what you experience (ID 6).

1.2 The Need for Information About the Consequences of an Eating Disorder

All adolescents described the need for information about the various aspects and consequences of an ED as an important part of a digital intervention. Particularly the need for information about the impact and consequences EDs may have on physical and mental health was highlighted by all adolescents as important to implement in a digital intervention. The need for information was linked to a desire to get insight into their own condition, and on a deeper level, get an increased insight into themselves. Knowledge was described by one adolescent as a means to being able to help oneself: "But I think knowledge could be important [to include]. Kind of, getting the possibility to learn while treating oneself (ID 5)".

Information about the various consequences an ED may have on physical health was described by many adolescents as useful to understand their ED and to grasp the severity of

the illness. All adolescents described how the ED had influenced their physical health in various ways, resulting in consequences for other areas of life, as described by one adolescent:

> […] my grades were just getting worse, you get very unfocused, you're not able to pay attention [short thinking break] you get tired. It feels like your body is getting destroyed really, and it just gets very, very difficult [short thinking break] everything, even school. And it feels pretty disturbing, because you need really good grades in today's society to get accepted into things, and it creates a lot of stress which can affect other things (ID 1)

> Another adolescent suggested how information about the severity of the consequences of an ED could be helpful in terms of it leading to increased awareness of the illness and motivation to address it:

> To me, it helped knowing that this stuff actually had serious consequences. Some consequences I didn't care about, but others were worse. For example, the fact that my teeth could become really ugly, that made me scared. […] Yeah, straight up knowing what you put yourself through by going through it [the eating disorder] (ID 5).

Some adolescents described how it might be difficult to realize the severity of the consequences of the ED. Thus, information was highlighted as a tool for increased insight into the dangers of the ED:

> […] even though you know you're sick, and the damage it can cause, like if you're malnourished and how it can affect you, you don't realize it straight away, and it feels kind of like a joke or a prank when someone tells you for the first time [short thinking break] you kind of just have to hear it again and again and get some physical proof that it actually is a disease and it's dangerous. So I think information about eating disorders is kind of important to include in this thing [digital intervention] (ID 1).

Many adolescents described how weight was a central part of their ED. In line with this, a need for information related to the concept of weight was highlighted. One participant expressed a need for information on weight and height related to age: "Maybe information on what you should weigh when you have this height and are at this age, like BMI, but maybe in the form of tips" (ID 6). Another adolescent describes how some might need to receive information about the importance of a healthy weight before targeting psychological symptoms: "[…] for many people, the weight might be so low that their thoughts are not really stable anymore. And then, for many people, getting to a more stable weight can be the most important thing before starting to think about feelings and mental health" (ID 2).

All adolescents except one described how their ED affected their body image in different ways. A need for information about body image was expressed. The adolescents reflected on how a preoccupation with body and shape could maintain their ED, as well as result in difficulties with an accurate perception of their own body:

> […] you get caught up in how you look, you might notice changes in yourself, and it might be motivating, and then you just keep on going. Or you might look at yourself in the mirror until you become blind. It's like, when you look too close, things kind of get magnified (ID 4).

One adolescent suggests that the inclusion of information about how all bodies are different may help increase self-acceptance and acceptance of one's own body:

> Often, that's all you really think about when you suffer from certain eating disorders, that you think about how you want to look or how your body should be, because a celebrity has that kind of body and that makes me want it too. But everybody is different, and your body shape is different no matter what. It's not going to be the same as any celebrity, because you're different. And maybe it has a lot to do with

genes and stuff. That your genes are like this, so it's not certain that you would look

like that, in a way (ID 6).

The ED had affected the adolescents' general mental health in different ways, and

many adolescents described how symptoms of anxiety and depression could occur as a result

of the ED. One adolescent suggests that working with comorbid symptoms in a digital

intervention may facilitate the possibility to work more concretely with the ED itself:

It's very common when you struggle with an eating disorder, you also struggle with

anxiety. I think focusing on that can eliminate several of the things you struggle with,

and it becomes easier to focus on [short thinking break] the eating disorder. So it

seems like a very important topic to focus on (ID 3).

One of the adolescents requested information about where an ED could have

originated, and how it might develop as a result of different factors:

Like if you're influenced by people around you, or where these thoughts came from

and how it started. It can originate from friends talking about it or focusing on it, or

maybe you searched for something on the internet and misinterpreted it, and thought it

was the correct thing to do. So, like, how it started and what's scary […] it's important

to look at where these problems can start (ID 4)

1.3 The Need for Information Directed Towards Parents to Ensure Their Involvement

Many adolescents described how their ED affected their family. All adolescents

described how their ED had led to difficulties related to family interactions. One adolescent

described how the ED caused a shift in family dynamics, as she did not feel confident in her

parents' intentions regarding her well-being:

It ruins a lot of the family dynamic when you get an eating disorder, it really does.

[…]. My eating disorder has ruined a lot in the relationships I have with my family,

like I can't really trust them. I feel like they're trying to hurt me, that they gloat when I

> eat something extra. It just ruins a lot, I feel like they want me to be in pain. Even
>
> though they obviously don't (ID 1)

Several negative emotions such as shame and guilt were described by many adolescents as a consequence of witnessing the effects the ED had on their family, as highlighted by one participant: "I remember feeling very embarrassed in front of my family. Actually, I still think so […] one can feel a little guilty, in a way" (ID 5). In line with this, it was suggested that it would be beneficial for a digital intervention for EDs to facilitate parental involvement. The provision of information about EDs and how parents could be a support for their child was suggested as a facilitator for such an involvement, as expressed by one adolescent: "But perhaps also towards parents, that parents should also, kind of get information on how they can help their children if they struggle with an eating disorder" (ID 6). Furthermore, the adolescent suggested how a digital intervention could help in managing relationships with family when struggling with an ED:

> But also, not everyone accepts or realizes that it [eating disorder] actually is a
>
> problem. Or like [short thinking break], not everyone will look at things the same way
>
> you do, often your parents or grandparents can be like: "but you're so beautiful, why
>
> aren't you eating" and... that you have to accept that not everybody will see things
>
> from your perspective, and that's fine. There may be conflicts in your family with you
>
> and your parents or other people in the family, but it will be OK in the end. Some tips
>
> and tricks on how to speak to your parents about it, or your grandparents or … yeah
>
> (ID 6).

2. Building Inner Strength and Resilience Through Skill Development

All adolescents expressed that low self-esteem, low self-efficacy, unhealthy control and self-critique were triggering and maintaining factors in their illness trajectories. Furthermore, these factors had affected them negatively in social settings, by making social

eating difficult and having negative impacts on their interpersonal relationships. The adolescents' experiences highlighted a need for a digital intervention that aided in skill development, with the overarching goal of building inner strength and resilience. In line with this, two subthemes were formed: 1) The road to increased self-esteem, 2) Overcoming social isolation: Reducing fear and strengthening interpersonal relationships.

2.1 The Road to Increased Self-Esteem

All adolescents expressed a need for a digital intervention for EDs that could provide guidance on how to build and strengthen self-esteem. One adolescent suggested how addressing issues regarding self-esteem could work as a gateway to relieve other ED symptoms, thus highlighting the importance of including content targeted at improving self-esteem: "It is also important if you have low self-esteem to build it up, once you manage to build a good self-esteem and become more confident in yourself, then everything else automatically becomes much easier" (ID 3). Many adolescents described how the ED reduced their sense of self-esteem, leaving them with a self-critical inner voice that in turn resulted in negative thoughts and emotions. To counteract these negative results, one adolescent suggested that a digital intervention for EDs should include content related to positive self-talk in order to challenge the inner critic and increase self-esteem:

> […] when you have an eating disorder, there's usually [short thinking break] other things bothering you as well. That you're kind of pushing yourself down. So, some sort of, how to get better self-esteem, or how you should talk to yourself […] Yeah maybe like weekly assignments like, say 15 nice things about yourself. Not necessarily chores, but tips on how to get a better month and those kinds of things (ID 6).

Furthermore, it was suggested that it could be useful to receive concrete tips on how to improve self-esteem: "[…] like tips on how to get a better self-esteem, that's what I think is the relevant focus" (ID 1).

A lack of perceived control over life is described by all adolescents as affecting their self-esteem, emotions and sense of mastery, thus making it important to address in a digital intervention for EDs. Several adolescents explained that an unhealthy focus on control was used as a regulation tool to manage difficult emotions, thoughts and sensations. Emotions and experiences of mastery was described as something that could fall and rise parallel with a sense of control over weight, body, food and performance on various areas of life: "If you don't feel like you are in control, you can feel a sense of failure. For many people with eating disorders, failing is completely catastrophic because the pursuit of control and being perfect becomes so great" (ID 2). This need for control could eventually lead to the development of painful and self-perpetuating cycles; the consequences of the ED make it challenging to regulate difficult emotions, whilst difficult emotions make it difficult to work on the ED: "Yeah it [eating disorder] makes it much harder to deal with difficult emotions, because you brain isn't working like it should. So, it's a lot harder to control your emotions" (ID 1). The ED may have functioned as a coping strategy or mechanism at some point before getting out of control. This was described by one of the participants:

> I feel like I like being in control and am a bit perfectionistic, but that it did not affect me in a negative way, except for [my eating disorder]. Then it just completely took over. […] If something negative happened, I did not want to eat, if you know what I mean (ID 5).

Several adolescents highlighted how letting go of unhealthy control is an important factor in the recovery process, due to the fact that unhealthy control was seen as maintaining the illness. Controlling food, body and weight became a solution to protect against inner turmoil and chaos. One adolescent described how experiencing a loss of control can have negative consequences, like excessive or restrictive food intake. The adolescent reflected that reducing the importance given to the experience of losing control could be an important step

towards recovery: "[…] if you lose control, you can either punish yourself by eating less, or you can punish yourself by overeating. So, I think that if the feeling of losing control becomes less important, those episodes may not happen as often" (ID 2).

Several adolescents described a need for obtaining alternative skills to counteract unhealthy control: strengthened emotion regulation, the ability to endure emotional pain and radical acceptance. One adolescent described how accepting your current situation and going with the flow of life whilst focusing on enduring and regulating challenging emotions is crucial in recovery from ED:

The fact that you have to let go of control to get well. That's important to include. You have to control food and you have to control everything, if anything bad happens it affects eating, and you use food to control everything. If you just think that you can't control everything and that you should go more with the flow of life, everything becomes a bit easier. You can't work towards recovery and hold back on anything; you have to let go of everything and just think that you can't control everything. You just have to live, and what will be will be (ID 5).

Obtaining skills meant to strengthen emotion regulation and the ability to endure emotional pain and difficult thoughts were described as important in the time after treatment has ended. One adolescent described that these skills could be protective factors against relapse by increasing self-confidence and self-efficacy:

[…] being able to cope with possible relapses is an important theme to be aware of towards the end of your treatment. […]. It was important knowledge for when I moved away from home, and I've used it from time to time, and it made me more confident when I was ending treatment, I was able to trust myself more. Like being able to handle difficult thoughts (ID 3).

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Closely related to the experiences of self-esteem being linked to feelings of control, some adolescents described creating strict rules and standards they had to live up to. If they did not accomplish adhering to them, their sense of achievement was reduced, thus affecting their self-confidence in a negative way. These rules often related to food, eating, calories, body image and weight: "Some people like to skydive, others get that sense of mastery from counting calories, being in control, those sorts of things" (ID 2). In order to counteract the fact that mastery can be tied to ED-behavior, one adolescent expressed a need for skills to work on unhealthy thought patterns and create healthy areas to experience a sense of mastery: "[…] and if you manage to change the mindset of the person struggling with an eating disorder to find other ways to feel mastery and joy in life, I believe that the chances of it going wrong will be reduced" (ID 2).

2.2 Overcoming Social Isolation: Reducing Fear and Strengthening Interpersonal Relationships

Several of the adolescents described how everyday life is challenging when one has an ED. Everyday situation relating to food in social settings were described as particularly challenging, such as at school and with friends. For many of the adolescents, these challenges resulted in loneliness and difficulties maintaining friendships: "it's very difficult to have friends or keep your friends or make friends [short thinking break] you get really lonely when you have an eating disorder" (ID 1). Others described how difficulties with food in social situations could result in avoidance and social isolation. Thus, suggesting a need for skills to make it easier for the adolescents to socialize:

> In a lot of social settings, food is the thing that gathers people. Like going out to eat or when you're visiting someone. So, focusing on that is very important because it can lead to people falling behind and not joining the social things happening. Because the fear of food or having to eat, are things you may not be able to do (ID 4).

Many adolescents described how their need for excessive control over food, calories and exercise could have negative impacts on their friendships. One adolescent described how her trying to live up to the strict rules she had created for herself, led to decreased energy and motivation for prioritizing friends:

> For many people, chasing being in a calorie deficit, training, food and everything else becomes so overwhelming that you don't have energy left to socialize, hang out with friends and do stuff you actually want to do. Hanging out with friends becomes de-prioritized because food takes over (ID 2).

Some of the adolescents expressed that being in social situations involving food whilst they were suffering from an ED could lead to painful feelings of fear, shame and excessive self-consciousness. When ranking different intervention options, one adolescent described that she believed that the use of Virtual Reality (VR) could function as a useful tool for behavioral exposure, which could increase eating-related self-efficacy and awareness of ED-related symptoms:

> I feel like if you could try like eating at school or with your family without doing it in real life, that you can stop any time you want, because it can be difficult and challenging. Like if you had VR, and could pretend to do it, then you could get feedback afterwards if you did something that was eating disordered behavior. You're not always aware of that (ID 1).

The importance of obtaining new skills to make being in social situations easier became clear in how some of the adolescents talked about the risk of relapsing after treatment has ended. One of the adolescents reflected on how important it is to have trust in yourself when facing potentially triggering conversations:

[Longer thinking break]. Maybe how to handle when people around you are speaking about food and calories and that stuff. Because I notice that in today's society, there's a lot of talk, like in the fitness world, about bulking and cutting and stuff, like being in a deficit to bring out muscles or when I'm supposed to be in a surplus. And many people look at that as normal, but for those suffering from eating disorders it could be a kind of trigger that ends up in a relapse (ID 2).

The need for skills to feel secure and confident in social settings was also highlighted by another participant. She described a need for skills in order to manage the consequences of the ED had on her social life: "[…] And how to handle it with classmates, having to leave earlier because you have a doctor's appointment, or having to leave early because [short thinking break], yeah. Or having to sit inside during recess to eat. Little things like that […]" (ID 6).

3. The Importance of a Personalized Intervention: How Format and Content can Motivate Use

The need for elements that can motivate regular use was expressed as important for adolescents in the development of a digital intervention for EDs. All adolescents expressed a need for interventions that they could manage and regulate in line with their personal requirements. They described how they found previous treatment experiences demanding and emphasized that future users will require motivation to engage with a digital intervention. Many adolescents underscored the importance of a motivating format and content. When asked whether a digital intervention could increase motivation for treatment, all adolescents replied yes. In regard to how they believed that a digital intervention for EDs could increase their treatment motivation, all adolescents expressed the need for an intervention that is accessible and can be adapted to everyday life.

ADOLESCENTS NEEDS: DIGITAL INTERVENTIONS & EATING DISORDERS

Following this, three subthemes were formulated: *1) The need for individualized content, 2) The need for engaging features and content, 3) The need for accessible treatment.*

3.1 The Need for Individualized Content

All adolescents reflected on how different aspects of an ED may not be universally experienced among those affected. They acknowledged the possibility that their needs regarding a digital intervention for EDs might be different from those of their peers, based on the fact that people with EDs are a heterogenous group: "Interviewer: "What do you think a digital intervention for eating disorders should include? Adolescent: I think it depends on the situation each person is in, and what type of eating disorder they're affected by" (ID 2). It was highlighted by all adolescents that the symptoms and challenges related to the ED were different. Some adolescents described how challenges related to friendships might not be a universal experience among all individuals with EDs:

[…] To me, it seems like it's something that's different from person to person. Not everyone with an eating disorder has difficulties with friends. Like, yeah. It will depend on that specific person's life. […] It might be an important source for the eating disorder for a person that experiences difficulties with friends, but I don't think that it's relevant for everyone, I don't think it's a universal thing (ID 3).

Thus, all adolescents emphasized the need for individualized content in a digital intervention for EDs. Furthermore, they expressed that for them to want to use a digital intervention, the content of the intervention should be adjusted to their particular ED. The exposure to content that did not resonate with their personal experience could evoke negative emotions, including feelings of inadequacy or a sense of not "being sick enough":

I don't think it should be very A4. It can make you feel uncomfortable if you're opening an app or a digital thing and it says something A4 that you don't relate to at

all. […] and then it can feel like your problems aren't big enough, which can make it

difficult. And it can make you feel like you're of less worth (ID 1).

Several adolescents also described how the content presented in a digital intervention should

be tailored to the stage of the illness that the user is experiencing. Failure to do so might result

in feelings of fear in the user:

> […] It can be a bit of both, it can be scary like if you get more caught up in it
>
> [knowledge about eating disorders]. But it depends on where you are, like, someone
>
> might think it's good to get that knowledge if you're in the beginning of it [eating
>
> disorder] because then you learn more about how it is, that you shouldn't do this and
>
> that (ID 4).

> Several adolescents expressed how previous treatment encounters had made them feel

alienated as they felt like they were being exposed to therapeutic approaches that did not

resonate with their subjective experiences. One participant highlighted a need for a digital

intervention format that offers the user opportunities to determine their own direction(s):

> Adolescent: […] because treatment for eating disorders is often very standardized and
>
> everybody gets put in a box, but it's pretty different from person to person. So, I feel
>
> like it should be a greater level of individualization, like being able to choose where
>
> you want to go and what applies to you. Because if you don't have an issue at all with
>
> weight or body shape, it's not relevant for you to have to go through it, to you, other
>
> things might be more relevant. Interviewer: That's a good point! So, do you think the
>
> digital treatment should be more tailored to the user? Adolescent: Yeah, I think so (ID
>
> 1).

3.2 The Need for Engaging Features and Content

Several adolescents described undergoing treatment as demanding, and that they had a

need for motivation both at onset of treatment and as a means to manage to endure treatment

as a whole: "[…] I found that it helped in finding motivation to continue treatment, because it was quite challenging to endure" (ID 3). Having format and content in a digital intervention motivate use and engagement was described as important by several adolescents. One of the adolescents described that the treatment she had undergone was effective, but it took time before the effects became noticeable. This highlights the importance of motivating the adolescents to use and engage with the digital intervention over time in order for them to experience noticeable improvements:

> Slowly but surely, everything gets better the further you get into treatment. […] You kind of get your life back. You go from having no life, to your friends coming back, then your self-esteem comes back bit by bit. Your life just comes back, and all the factors fall into place, both your friends and self-esteem (ID 5).

All adolescents highlighted the importance of being conscious of presentation and wording of the content in a digital treatment. They expressed the need for a delicate balance: the digital intervention must provide reliable and accurate information, whilst not triggering a worsening of the disease. One adolescent described how this balance can be challenging: "Yeah because the disease turns everything upside down. The goal is to get as sick as possible. It's really difficult actually, because you have to provide knowledge, while at the same time avoid providing tips on how to become sicker" (ID 5). Many adolescents described that an excessive focus on topics such as food, calories, eating and weight could be potentially harmful, as they could induce negative emotions like fear, guilt and shame. In line with this, one adolescent expressed skepticism concerning one of the alternatives presented to her when asked to rank four examples of what a digital treatment could look like:

> I feel like if you choose the first A [an app where you can learn about eating disorders, keep a food diary, submit home assignments, record weight] food diaries and

recording your weight can be pretty scary, I think that could be pretty scary. I would

maybe rank that last because that can be pretty scary for a person (ID 1).

Another adolescent reflected on why she believed an excessive focus on meal planning could

potentially be harmful:

Adolescent: I think meal planning and stuff can be harmful, yeah. Those types of

things. If there's too much focus on calories, or too much focus on what you eat and

what you weigh, it will quickly become more negative than positive. Interviewer: So,

an excessive focus on it can be negative? Adolescent: Yeah, absolutely (ID 3).

As a result, many adolescents suggested a need for a more positive and motivating

focus when content included potentially challenging and triggering topics such as food,

calories and eating. This was further emphasized when one of the adolescents expressed that a

topic that she described as potentially harmful, meal planning, also could be helpful. Having a

positive focus on meal planning was described as motivating:

My experience was that when I actually planned my meals, it was easier to actually

carry them out and actually eat and being able to look back on it like "yeah I actually

managed to eat that day" and it became a more positive thing, that I mastered it, rather

than a negative thing (ID 3).

Another adolescent underscored the need for a positive focus on challenging topics:

Like with my experience, there was a period where I couldn't eat more than 1000

calories a day, and if I did, it was a disaster. It was because I didn't know any better.

So, I think it's important to get more information about eating, calories and food, and

have a more positive focus on it (ID 1).

One of the adolescents suggested that it could be motivating to include role models

who had personal experience with EDs. It was expressed that this could be useful as the users

of the intervention could relate to the role models and be inspired by their stories of recovery:

You should maybe include role models in the app who can talk about it and that

people can look up to. This can convince them that it's worth it to go through. I think

that's really smart. […] It should probably be people who have experienced the same,

so they know what they're talking about. At the same time, it's probably smart if a

celebrity does it, someone you look up to. Someone you can trust because you like the

opinions they have. So, it's like, if that person says this, they're probably right (ID 5).

Some adolescents suggested that a digital intervention for EDs should utilize

notifications, as this could increase the user's uptake to the digital intervention, and motivate

them to enter it. The adolescents also described what they thought the notifications should

contain. One adolescent expressed that notifications should include motivational quotes: "I

think it should be something motivating. Not necessarily daily, but maybe like... some kind

of, "you've done great today or keep on going", like little motivational words or sentences"

(ID 6).

Many adolescents suggested the involvement access to a face-to-face therapist in a

digital intervention for EDs. Many adolescents had experiences of treatment as highly

demanding, and underlined how the inclusion of a therapist could help increasing their overall

motivation for using the digital intervention:

Yeah, I think [digital intervention can help increase motivation for treatment]. But at

the same time, there's something about having a relation to a therapist and seeing

someone who pays attention and follows up on you. So, it may demand a great deal of

self-discipline to take part in a digital treatment (ID 3).

Furthermore, some adolescents explained how being monitored by a therapist would increase

motivation for reporting truthfully when engaging with the intervention:

That maybe therapists and doctors could be involved in the app somehow? Because I

can submit that I ate 17 pieces of cheese, but if they see me, like, I can write that I've

done that for a month, and then when they see me, I haven't gained weight at all. And

then they can see that I've been lying, which can make it easier to not dare lying to the

app, because you know it gets checked (ID 6).

3.3 The Need for Accessible Treatment

Many adolescents expressed difficulties related to psychological treatment that

required attendance. It was described as time-consuming and hard to combine with everyday

life as an adolescent. Consequently, a need for a digital intervention that can be accessible and

adapted to everyday life was expressed by all adolescents. A central element was that a digital

intervention could increase school attendance and make life easier:

Adolescent: It makes it more accessible maybe, or kind of easier to adjust to your

everyday life. Like, if you're in school, not having to leave school all the time.

Interviewer: So that it does not affect your school attendance? Adolescent: Yeah, and I

can imagine that it's easier for some people to take part in, or it does not feel so...

[short thinking break] going to a therapist is very taboo, and many people feel like

they have to hide it (ID 3).

Having access to treatment, for instance on your smartphone, was highlighted as a positive

aspect of a digital intervention for EDs, and one adolescent expressed how this can make

going through the intervention more achievable: "At least this generation is on their phones a

lot. It might be easier to download an app instead of going to a therapist or a doctor multiple

times a week" (ID 6). Closely related to this, many adolescents discussed how a digital

intervention could be accessible to those who would not seek help in person and viewed this

as a motivational factor for using a digital intervention: "Having access to a digital service can

be a big help for many people, when they do not want to reach out to others or seek other

help" (ID 2).

Several of the adolescents reflected on how digital intervention could function as a tool that they can use themselves, while it also being a great supplement to treatments that require real life attendance. One adolescent expressed how having a digital treatment available can act as a support during difficult periods between scheduled appointments with therapists in real life:

It makes it more accessible, because it's not like [short thinking break] when you have an eating disorder, you're maybe going to treatment sessions once or twice a week, the rest of the time you're on your own. And if you're having a difficult time, you can maybe use it [digital intervention] yourself, and it's more accessible. And if you have something brewing on your mind, or you don't dare to put in for an emergency session, you can get some treatment from there (ID 1).

Furthermore, some of the adolescents discussed the societal need for a digital intervention for EDs, as well as the fact that a digital intervention may increase help-seeking amongst adolescents. One adolescent highlighted how a digital intervention may have societal benefits as she believed it could help multiple people simultaneously in an overworked healthcare system:

I think it will be a lower threshold for seeking a digital treatment compared to physical. It will also create a possibility for helping multiple people at the same time. It's limits to how many children a therapist can help. I know there's long lines of people in need of help that maybe don't get the help they need because of limited capacity. A digital solution would reduce the number of children not getting help (ID 2).

Discussion

The purpose of this study was to explore the needs of adolescents regarding a digital intervention for EDs. Using RTA, we identified three main themes with associated

subthemes: 1) *"Learning while treating oneself" - The importance of trustworthy information about eating disorders*, 2) *Building inner strength and resilience through skill development,* and 3) *The importance of personalized intervention: how format and content can motivate use.* Collectively, these themes illuminate the existence of different needs expressed by adolescents in relation to both the context and format of a digital intervention for EDs, as well as different needs related to the content of the intervention.

Trustworthy, Reliable Information About Eating Disorders

The first theme given above addresses the adolescents' need to learn about various aspects of EDs supported by reliable information to gain an increased understanding of themselves and their own illness.

Through our analysis, we found that the adolescents had a need for a form of digital intervention that provides reliable information on aspects of EDs as well as information being presented in one place. These experiences align with research emphasizing that widespread accessibility of information via the Internet and other technologies has posed both opportunities and challenges for individuals in pursuit of knowledge, including information relating to EDs (Šmahel et al., 2018; Eysenbach, 2008; Kraft & Yardley, 2009). It became clear how several of the adolescents in the current study used the Internet and other digital platforms to obtain health-related information. Using the Internet to obtain health-related information is not unique to the adolescents in our study. 78% of Norwegian adolescents between the ages of 16 and 24 has used the internet to search for health-related information (Statistisk Sentralbyrå, 2022). A systematic review including studies from the United States, the United Kingdom, Canada, Israel, Nigeria, Sweden and Uganda found that adolescents seek out information concerning general well-being, sexual health, mental health and many other topics (Park & Kwon, 2018).

Many adolescents in the current study described that using the internet to collect ED-related information was challenging, partly due to uncertainty of which sources were trustworthy. Several studies suggest that online information about EDs often is of variable or poor quality and difficult to read (Arts et al., 2019; Cardel et al., 2016; Guardiola-Wanden-Berghe et al., 2011; Modave et al., 2014; Reavley et al., 2022). Due to the vast power of the internet for sharing health-related information, there is a corresponding risk of spreading inaccurate, misleading, harmful, or low-quality information (Šmahel et al., 2018). For instance, Fairburn and Rothwell (2015) demonstrated that the most common function of apps designed for individuals with ED was providing advice, of which the quality varied from sound to potentially harmful.

The current study highlighted the adolescents expressed need for a digital intervention that could provide reliable information about EDs in one place. This corresponds to findings in a mixed-methods study assessing acceptability and user experience of a smartphone application for adolescents with AN (Naccache et al., 2021). Here, participants suggested that having a single source of reliable data or data facts would limit the risk of false beliefs, food obsessions or a sense of guilt, and facilitate communication with professional caregivers (Naccache et al., 2021). In line with this, we argue that the inclusion of reliable and quality assured information in a digital intervention for EDs may help reduce the need for adolescents to search for information about EDs on various digital devices and platforms, thus reducing the risk of exposure to potentially harmful and incorrect information about EDs and health-related information.

Closely related to a need for trustworthy, reliable information, all adolescents expressed a need for credible knowledge and information about the impact and consequence of EDs. Knowledge was deemed crucial for comprehending the severity and scope of the disorder, as well as a positive means for self-help. The individual's knowledge about mental

disorders is often discussed in relation to the concept of "mental health literacy" (MHL) which refers to individuals' knowledge and beliefs about mental disorders (Jorm et al., 1997; Jorm, 2012; Gratwick-Sarll et al., 2013). Psychoeducation is described as an intervention that can promote MHL and knowledge about mental health in adolescents (Akena et al., 2021; Morgado et al., 2021). This is of interest as studies suggest that poor MHL is a significant factor contributing to low or inappropriate help-seeking behaviors among individuals with mental health problems (Jorm, 2000; Jorm, 2012). This includes not only attitudes and beliefs that promote stigma, but a lack of awareness or understanding about the manifestation of various types of EDs, as well as the available treatment options that are most effective (Andrews et al., 2000; Bullivant et al., 2020; Chen et al., 2010; Gratwick-Sarll et al., 2013; Jorm, 2000; Jorm, 2012; Jorm et al., 1997). Psychoeducation is deemed an essential part of psychological treatment, and it may be especially important in relation to EDs given the amount of misinformation available about "healthy" eating and weight (Beilharz et al., 2021; Heruc et al., 2020). In line with our findings, a study highlighted psychoeducation as an important feature in the evaluation of a smartphone application for AN (Naccache et al., 2021). Psychoeducation was deemed particularly important because of the difficulties participants faced when they looked for information about the disorder, such as overwhelming amounts of information, guilt-inducing information or even false information that could reinforce false beliefs or symptoms (Naccache et al., 2021).

It has been suggested that knowledge of one's own condition can be beneficial for patient outcomes (Tatham et al., 2016; Tursi et al., 2013; Zhou et al., 2020). For instance, in a review study, increased knowledge of depression was associated with improved psychosocial functioning and adherence to treatment among depressive patients undergoing CBT-treatment (Tursi et al., 2013). The beneficial effects of knowledge of one's own disease have also been demonstrated for ED-patients. In a study assessing the impact of a pre-treatment

psychoeducational intervention, comparing its impact on groups of AN and BN, researchers found that unhealthy eating attitudes among BN-patients were reduced (Tatham et al., 2016). Provision of psychoeducation that elucidates the negative impacts of even modest dieting on brain function, as well as the potential for the brain to establish new and adaptable connections with sufficient nutrition, has been connected to improvements in global eating psychopathology and body acceptance (Zhou et al., 2020).

Combined, the current results and historic research findings imply that the inclusion of information and psychoeducation about different aspects of an eating disorder in a digital intervention for EDs may contribute to increased MHL as well as positive patient outcomes. This may, in turn, have positive implications for the users understanding of their own illness and encourage adolescents to make positive choices regarding their own health, such as increasing help-seeking behavior and self-efficacy.

Parental Involvement

Many adolescents in the current study also expressed a need for parental involvement in a digital treatment for ED. Increased parental knowledge about EDs was described as a factor that could provide good support and assistance for both the family as a whole and the adolescent individually. After the COVID-19 pandemic, patient, user and family organizations reported that family members did not receive adequate guidance on how they could best help their children (Ukom, 2022). Furthermore, the need for more information, involvement of family members as a resource and support is highlighted in the Norwegian government's family caregiver strategy and action plan from 2020 (Helse- og Omsorgsdepartementet, 2020).

Parental involvement in the treatment of EDs for adolescents is emphasized in clinical guidelines, both in Norway and internationally (Helsedirektoratet, 2017; NICE, 2020). The family is described as an important support system and a valuable resource for the patient, as

they may contribute to reducing the risk of relapse and increasing coping skills for both the patient, parents, and possibly other relatives (Byrne et al., 2015; Couturier, 2013; Helsedirektoratet, 2017). The advantages of parents being involved in different modes of ED-treatment and supplementary programs is well established in the literature (Bryson et al., 2018; Fairburn et al., 2008; Le Grange et al., 2007; Le Grange et al., 2015) and are in line with the anticipations of the adolescents in our study.

Previous research indicates that parental participation in FBT and similar programs can lead to an increase in parental self-efficacy (Macdonald et al., 2011; Robinson et al., 2013; Spettigue et al., 2015), knowledge (Macdonald et al., 2011; Spettigue et al., 2015), and a reduction in caregiver distress (Sepulveda et al., 2008). Furthermore, studies have highlighted parents' lack of knowledge about nutrition, physical changes associated with recovery and medications used in the treatment of eating disorders (Castillo et al., 2015; Zucker et al., 2005). In randomized controlled trial (RCT) evaluating the efficacy of a 2-hour psychoeducation session combined with bi-weekly telephone support, researchers found that the intervention increased parental knowledge and self-efficacy and reduced the impact of ED-symptoms in the family (Spettigue et al., 2015), underscoring the importance of parental involvement. We therefore argue that the inclusion of information aimed at parents/caregivers in a digital treatment for EDs could potentially reduce adolescent ED symptoms and therefore improve treatment outcomes.

The Inclusion of Skills Related to Self-Esteem, Emotion Regulation and Resilience

The second theme mentioned at the beginning of this discussion addresses the adolescents' need for skills in relation to self-esteem that could help them develop and maintain inner strength and resilience over time and across situations.

All adolescents reflected on how a digital intervention for EDs could provide guidance on how to build and strengthen self-esteem. Through our analysis, we identified a need for

skills to improve self-esteem, as this could make the adolescents more self-assured and lead to improvements in other aspects of life. This aligns with the views of Morton and colleagues (2012), who state that self-esteem is important for the development and maintenance of good psychological health. Furthermore, self-esteem is often associated with resilience as an internal protective factor and has been studied in adolescent populations (Dumont & Provost., 1999; Liu et al., 2021; Pargas et al., 2010). Self-esteem is an important factor for developing self-acceptance, self-responsibility and self-care, whilst resilience helps individuals cope with adversity and pressure (Liu et al., 2021). Resilience and self-esteem seem to promote each other (Liu et al., 2021). This implies that increasing self-esteem might increase the adolescents' overall resilience. Studies on resilience and ED have indicated that resilience could be a protective factor across ED diagnosis (Vervaet et al., 2020; de Vos et al., 2017), reduce ED symptoms over time (de Vos et al., 2017) and improve body image (McGrath & Wiggin, 2009). Consequently, we argue that including content targeting specific factors relating to resilience could enhance self-esteem and reduce psychopathology.

In the current study, many adolescents expressed how their self-esteem and sense of mastery fluctuated in tandem with their ability to control food intake. The notion of self-esteem being affected by feelings of control has been illustrated in several studies (Biney et al., 2022; Brockmeyer et al., 2013). In a pilot RCT study, researchers suggest that patients suffering from EDs with significant low self-esteem may use controlling food, weight and body shape to gain a sense of self-worth (Biney et al., 2022). This further aligns with studies suggesting that patients with AN associate self-esteem and a sense of achievement with low weight, where weight gain could remove a sense of achievement and therefore lower their self-esteem (Brockmeyer et al., 2013). In accordance with findings suggesting that a focus on increasing self-esteem in ED patients might work as a catalyst for change in ED-psychopathology (Biney et al., 2022), we argue that a digital intervention for EDs should

address low self-esteem and seek to facilitate a sense of mastery of healthy life areas. This could potentially support motivation to change whilst being beneficial for improvement in ED-psychopathology.

Many adolescents in our study expressed how not living up to their own standards led to a sense of failure which affected their self-esteem. Through our analysis, we linked this to a need for addressing self-criticism. This is in line with findings from a cross-sectional case control study examining the relationship between critical inner voices, low self-esteem and self-criticism in ED-patients (Noordenbos et al., 2014). Their results demonstrated that ED patients showed higher levels of self-criticism and lower self-esteem than the non-clinical control group. Furthermore, lower self-esteem was associated with more frequent experiences of hearing a critical inner voice (Noordenbos et al., 2014). These findings correspond with previous research, describing how self-criticism is an independent and strong predictor of EDs (Fennig et al., 2008), and individuals with high self-criticism regard negative outcomes as the result of their own deficits (Beck, 1976). Additionally, self-criticism has been found to mediate the relationship between perfectionism and EDs, with perfectionism being established as a robust risk factor in both the development and maintenance of EDs (Barakat et al., 2023; Dunkley et al., 2006; Holland et al., 2013). We argue that in the development of a digital intervention, one should use the knowledge of how self-esteem is affected by self-criticism and implement a focus on interventions that seek to reduce the experience of self-criticism and increase the users' self-esteem.

Many of the adolescents in the current study expressed how their unhealthy emphasis on control was used to regulate challenging emotions, thoughts and sensations. This is in line with research suggesting that difficulties with emotion-regulation is a transdiagnostic phenomenon across the different ED diagnoses (Brockmeyer et al., 2014; Harrison et al., 2010). Research has shown an association between individuals with better emotion regulation

skills and resilience in the face of challenging situations (Tugade & Fredrickson, 2004; Aldao et al., 2010; Reivich et al., 2011; Polizzi & Lynn, 2021). A systematic review of the relationship between emotion regulation and psychological resilience demonstrated that emotion regulation is positively associated with resilience (Polizzi & Lynn, 2021). In addition, findings suggest that healthy emotion regulation may facilitate emotion- and problem-focused coping, which in turn promotes resilience (Polizzi & Lynn, 2021). The use of technology to address issues concerning emotion regulation has gained greater traction over the year (Jadhakhan et al., 2022). Findings from a literature review showed promising results regarding the efficacy of digital technologies with the aim of enhancing emotion regulation skills, such as increased ability to recognize, monitor and reduce negative emotions (Jadhakhan et al., 2022). This implies that it could be beneficial to include content aimed at enhancing adolescents' emotion regulation in a digital intervention for EDs. Furthermore, due to the nature of the relationship between emotion regulation and resilience, we argue that the inclusion of content focusing on the development of healthy emotion regulation skills may also contribute to the improvement of overall resilience.

Improving Interpersonal Efficacy

Several adolescents in our study described how their ED had affected their social and interpersonal life. Our analysis emphasized challenges related to loneliness, isolation, fear of social situations due to the potential of communal eating, and difficulties regarding establishing and keeping relationships. This is in line with prior research suggesting that adolescents with high ED pathology reported experiencing more interpersonal difficulties with their friends, such as alienation and conflict, compared to a non-clinical sample (Sharpe et al., 2014). Through our analysis, we identified that the adolescents had a need for skills that could help them in their everyday life, specifically skills that can help them develop and maintain interpersonal relationships as this was challenging during illness.

Developing peer relationships is considered a key developmental task for adolescence (Rabaglietti & Ciairano, 2008). Studies show that difficulties in interpersonal relationships may be a risk factor for the development and maintenance of EDs, as well as body image disturbances (Fairburn et al., 2003; Ruuska et al., 2007). The need for interpersonal and social skills was also identified in a qualitative study exploring social skills and functioning in young people with EDs (Patel et al., 2016). Furthermore, social skills and the ability to establish positive relationships have been found to be important factors in the development of resilience (Cerit & Şimşek, 2021). This implies that including content in a digital intervention that increases social and interpersonal skills may improve the user's interpersonal efficacy and their relationships.

Several of the adolescents in our study described situations involving food in social contexts, such as at school or with friends, as particularly challenging. Such experiences correspond with a study investigating fear and avoidance behavior in individuals with self-reported ED (Melles & Jansen, 2023). Their findings suggest that individuals with EDs may be fearful of situations involving social eating and the perceived social consequences of eating, such as rejection, judgement and criticism due to food, eating and weight gain (Melles & Jansen, 2023). This may lead to avoidance behavior related to situations where there is potential for social eating, in order to protect themselves from the expected discomfort this would lead to (Melles & Jansen, 2023). One adolescent in the current study suggested that the use of virtual reality (VR) could be helpful when engaging in behavioral exposure, as it could feel safer for the user to expose themselves to fear in a safe environment. The use of VR in patients with EDs was demonstrated in a systematic review where it was highlighted that VR is an acceptable and promising therapeutic tool for patients with EDs (Clus et al., 2018). For instance, it has been demonstrated that repeated VR-sessions exposing patients to food stimuli and silhouette of themselves can reduce anxiety responses, leading to a reduction in negative

emotions (Riva et al., 2021; Cardi et al., 2012; Gutiérrez-Maldonado et al., 2006). In line with the above, we argue that the inclusion of specialized interventions targeting fear and avoidance may be a good addition in a digital intervention for EDs.

Aspects of a Digital Intervention That Promotes Use and Engagement Over Time

The third theme mentioned at the outset of this discussion addresses the adolescents need for personalized, engaging and accessible digital interventions.

All adolescents in our study highlighted a need for interventions that were personalized and tailored to their needs. EDs are highly heterogenous in terms of symptom presentation and treatment response (Keel & Brown, 2010; Levinson et al., 2022), and presentation of symptoms within an ED-diagnosis can be vastly different (Levinson et al., 2018). This aligns with findings in the current study, where all adolescents expressed how an ED could present itself in various ways, with different symptoms. For instance, some were afraid of high calorie foods, while others were more attentive to negative emotions such as shame and guilt. In a proof-of-concept study, researchers found that almost half of individuals endorsed non-weight and shape symptoms (such as shame) as most important in relation to the maintenance of ED-psychopathology (Levinson et al., 2022). As most traditional treatments such as CBT-E is based on average symptom presentation (Levinson et al., 2021; Levinson et al., 2022), this could explain our findings in relation to the common frustration of experiencing treatment as inflexible with little understanding of individuality. This lack of personalization has been linked to low remission rates in traditional treatment (Levinson et al., 2021). Despite being known as the gold-standard treatment for EDs (Fairburn, 2008) the response rates for CBT-E are only 50%, and up to 35% of those who remit eventually relapse (Carter et al., 2012; Keel et al., 1997; Keel et al., 2005; Levinson et al., 2021; Strober et al., 1997). Additionally, fewer than 40% of adolescents hit remission at the end of a course of

standard FBT (Le Grange et al., 2021). Thus, this implies the need for individualized treatment options for adolescents.

The "one size fits all" treatment experience is not unique to the adolescents in our study. Qualitative studies exploring the experiences regarding in-patient treatment for EDs suggested that not being treated as a unique individual was experienced as unhelpful (Offord et al., 2006; Vandereycken, 2003). Negative experiences connected to a lack of personalization have also been shown in relation to digital interventions, with a study investigating user experience of a mobile health app for patients with an ED (Anastasiadou et al., 2019). This study found that problems reported most frequently concerned the lack of personalization of the app according to their needs (Anastasiadou et al., 2019). In line with the adolescents in our current study, research suggests that personalized treatment is viewed positively by users (Anastasiadou et al., 2019; Escobar-Koch et al., 2010; Jarman et al., 2022; Naccache et al., 2021). In a qualitative exploratory study examining participants' perspectives on treatment and service provision, participants identified a need for ED services to provide treatment adjusted to the individual (Escobar-Koch et al., 2010). In the evaluation of a smartphone application for EDs, the possibility to personalize content and relate it to own experience was deemed crucial by participants in a qualitative mixed evaluation study (Naccache et al., 2021). Furthermore, a lack of this possibility was deemed as limiting their engagement with the application (Naccache et al., 2021).

As patients with EDs are a highly heterogenous group, and traditional treatments are typically based on average symptom presentations with fairly low remission-rates, we argue that a higher level of personalization of treatment interventions may contribute to increased treatment outcome. Consequently, developers should keep in mind and seek to implement the possibility for individualization and personalization when developing digital interventions for EDs, as this may increase user engagement and acceptability.

Adolescents in the current study underlined the importance of a digital intervention that could promote regular use over time. In order for the content of a digital intervention to appear engaging, one must actually make use of it. Whether interventions are actually used over time can be understood in relation to the concepts of uptake and engagement (Taylor et al., 2019). Uptake and engagement can be influenced by several factors such as features associated with the intervention options themselves, accessibility and usability (Taylor et al., 2019). This aligns with findings in the current study where the adolescents highlighted how features associated with the intervention, such as the use of notifications, the inclusion of positive role models and a positive focus on potential triggering topics could promote and engage use. The positive effects of the use of notifications and the inclusion of positive role models and a positive focus on challenging topics have been highlighted in the literature (Naccache et al., 202; Jaman et al., 2022; Lindgreen et al., 2018).

The adolescents described an optimal digital intervention for EDs as something that could be accessible in their everyday life by being available on digital devices already used by the adolescents such as smartphones or on a computer. Thus, they suggested that it could be adapted to their everyday life to a greater extent than traditional treatment. Having access to a digital intervention gives individuals flexibility to gain access to treatment at any time, and thus the ability to incorporate the treatment into their everyday lives (Jarman et al., 2022). Accessibility has been suggested to influence engagement with digital interventions over time (Taylor et al., 2019; Weissman et al., 2020). Furthermore, the availability and accessibility of digital technologies and the Internet can enable populations at risk of ED to engage with healthcare services anonymously and at their convenience (Bauer & Moessner, 2013). One adolescent in the current study suggested that a digital intervention could be accessible between therapy sessions requiring physical attendance, thus working as a support. This was also found in a qualitative study, reporting that participants found a smartphone application

for EDs to be a useful tool between physical sessions (Anastasiadou et al., 2019). The adolescents in the current study described experiences of treatment as something that was challenging to endure. We argue that this indicates that an enhanced focus on engagement is particularly important when developing a digital intervention for ED, as drop out from digital interventions and traditional treatment is a major problem (Leichsenring et al., 2019; Taylor et al., 2019). Given the expressed view that undergoing treatment is demanding, and that adolescents with EDs are more likely to drop out of treatment, we argue that digital interventions aimed at this patient group should have an enhanced focus on motivating their users to engage over time.

Many adolescents in the current study expressed a need for access to a face-to-face therapist in a digital intervention for EDs. They suggested knowing that a therapist was tracking their progress would increase motivation for reporting truthfully when engaging with the intervention. Additionally, having a therapist involved was suggested to increase use and engagement overall. The positive effects of having a therapist involved in digital interventions are supported by a qualitative study examining users' experience using a self-monitoring app (Lindgreen et al., 2018). Here, the knowledge of having a clinician check their progress provided users' a sense of security and safety. However, for some participants it led to avoidance due to feeling shame when not following the treatment as planned (Lindgreen et al., 2018). This implies that individuals suffering from ED may have different needs regarding the involvement of clinicians in a digital intervention. We argue that this further underlines the importance of having the ability to individualize content and format to the specific person as this may increase acceptance and engagement with the intervention.

Methodological Discussion

There are several methodological aspects that need to be discussed. First, the current study used a convenience sample, as the study was announced prior to participant self-

selecting whether they wanted to participate (Stratton, 2021). Convenience sampling depends on the motivation of the participants, thus introducing motivation bias into the study as participation is dependent upon the interest the participants have in the research topic (Stratton, 2021). All participants in the current study had experiences with treatment as not optimized for their needs. Their motivation to participate might therefore be a result of a desire to express a disgruntled point of view on treatment, and/or a wish to share their experience in order to contribute to improving treatment options.

Second, our participants where all Norwegian females between the ages of 16 and 19. No male adolescents volunteered to participate in this study. The lack of male participation could be considered a significant limitation in our sample when researching the needs of adolescents in a digital treatment for ED, as the prevalence of male ED is likely to be grossly underestimated (Gorrell & Murray, 2019). Furthermore, the participants were not asked to specify what type of ED they had suffered or were still suffering from. This could be regarded as a possible limitation given that the participants themselves acknowledge the heterogeneity among ED, and that individuals suffering from different EDs may have different needs. The participants were not asked to specify their cultural background, sexual orientation and level of functioning. Consequently, the degree to which the needs expressed by the adolescents in this study reflect the needs of adolescents with EDs regarding a digital treatment for ED is open for debate.

Third, all interviews were conducted by the use of a telephone. This may result in certain drawbacks, as there is a loss of nonverbal cues such as facial expressions and body language. This can potentially limit the information obtained. Conducting the interviews over the telephone demands a greater effort in terms of voice control and attentive listening from both the interviewer and the interviewee (Azad et al., 2021). We attempted to address this potential limitation by informing the adolescents that misunderstandings may arise due to not

being able to see each other. We encouraged the adolescents to speak up if any misunderstandings occurred. Furthermore, concerns related to technological errors, such as loss of contact or poor sound quality could affect both parties in the interview (Azad et al., 2021). We experienced this firsthand when one of the interviewees wanted to conduct the interview whilst using public transportation with variable accessibility to mobile phone coverage. However, the use of telephone interviews may also present several advantages. It allows participants to conduct the interview when and where they choose. A qualitative study with the aim of exploring the experiences of participants and researchers concerning telephone interviews found that telephone interviews is a good method for data collection if the goal of the study is to obtain information about participants life experience, rather than building a long-lasting relationship (Azad et al., 2021). Furthermore, several of the participants in the study reported that they felt more comfortable and less self-conscious when they did not have to worry about their appearance or body language during the interview. In line with this, several participants found that talking over the phone created a form of anonymity, which made it easier for them to talk about sensitive topics (Azad et al., 2021).

Lastly, during the final stages of our writing process, we translated the quotes included in our study from Norwegian to English. We reflected on the fact that there were some parts of the quotes that did not translate directly from Norwegian to English. We focused on trying to convey what the participants were communicating whilst trying not to change too much in terms of structure. It is important to note that the translation process could move the intended meaning of the quotes further away from the adolescents' original language. However, as our analysis was based on the Norwegian transcriptions, we argue that the analysis itself is not affected by this limitation. Furthermore, we had an inductive approach to the analysis process meaning that the data formed the basis of our analytic process without attempting to fit it into pre-existing theories or frameworks (Braun & Clarke, 2022). However, as investigators, we

can never be completely detached from theoretical frameworks, professional interests and our own perspectives on a subject. Braun & Clarke (2022) describe this as the investigator being inherently situated in relation to the data. Consequently, our analytical process was to some degree influenced by a deductive approach where our previous experiences, perspectives and knowledge might have influenced our analysis. These are listed under "reflexivity" in the current study.

Clinical Implications

This study provides insight into adolescents' needs regarding a digital intervention for EDs. By taking the adolescents needs into consideration when developing digital interventions for EDs, uptake and engagement can be optimized. As traditional treatments for EDs currently have relatively low remission rates, there is a need for developing alternative treatment options. User-centered approaches such as the Person Based Approach (Yardley et al., 2015) provide an important insight into the needs of intervention end-users, thus making the success of interventions more probable. The adolescents in this study clearly express the importance of how the content and features in a digital intervention for EDs should be personalized, accessible and be a provider of skills and reliable information. In the development of a digital intervention, one should therefore look at solutions for how these needs might be met. This may facilitate increased use and engagement, which in turn may reduce ED-symptoms. On a larger scale, having access to digital interventions aimed at mental health challenges may improve accessibility to treatment for an increased number of adolescents and decrease barriers to treatment such as disease stigma, treatment waiting lists and practical access barriers.

Conclusion

The participants emphasize how taking their needs into account when creating a digital intervention can increase uptake and engagement to the intervention thus highlighting

how user involvement in the development of digital interventions for eating disorders can

provide an insight into the potential end user's perspectives and needs.

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ADOLESCENTS NEEDS: DIGITAL INTERVENTIONS & EATING DISORDERS

Appendix A

Interview Guide

INTERVJUGUIDE: Telefonintervju

Informasjon

«Jeg heter xx. Kjempeflott at du har mulighet til å hjelpe til i dette prosjektet der målet er å utvikle en digital behandling for ungdom med spiseforstyrrelser.

Intervjuet tar cirka 20 minutter, og det er ikke noen «rette eller «feile» svar.

Det er noen spørsmål som handler om dine erfaringer eller tanker om å bruke nettet, apper eller annen teknologi for å hjelpe ungdom med spiseforstyrrelser. Vi er særlig opptatt av å få vite hva du tenker om utviklingen av en sånn app; hva er viktig at vi gjør og hva er viktig at vi unngår.

Som nevnt i informasjonsbrevet kommer vi til å ta opp intervjuet, dette fordi vi skal være helt sikker på at vi får med oss det som blir sagt. Vi tar ansvar for at all informasjon du deler med oss vil bli oppbevart trygt og sikkert.

Før vi setter i gang med spørsmålene, så vil jeg fortelle litt om bakgrunnen for prosjektet: UngMeistring ønsker å bedre behandlingen for ungdom ved å ta i bruk teknologi. I dette prosjektet er målet å utvikle digital behandling for ungdom med spiseforstyrrelser. For å kunne utvikle en god og trygg digital behandling trenger vi å forstå hva som er viktig for ungdom.

Har du noen spørsmål om prosjektet?

Er det greit om jeg begynner å spille inn nå?

Kartlegge brukernes kunnskap og erfaringer med digital behandling

Det første jeg lurer på er
Har du noen gang prøvd apper eller annen teknologi for å få hjelp
med en spiseforstyrrelse eller andre vansker?   **JA/NEI**

Ikke prøvd digital behandling
Har du hørt noe om digitale behandlinger?   **JA/NEI**
Hvis JA: Hva har du hørt?

Prøvd digital behandling
Hvordan synes du det var?
Hva var det som var positivt/negativt [adjektivet deltakeren bruker]?
Var det noe som var negativt/positivt, evt. hva da?

ADOLESCENTS NEEDS: DIGITAL INTERVENTIONS & EATING DISORDERS

Kartlegge brukernes behov knyttet til digital behandling

Når vi skal utvikle en app eller lignede på mobil, PC og VR-briller trenger vi innspill fra ungdom.

Bør en digital behandling fokuserer på noen av de følgende temaene?

Kunnskap om spiseforstyrrelser	**JA/NEI**
Vansker i familien	**JA/NEI**
Lav selvfølelse og selvusikkerhet	**JA/NEI**
Bekymring for mat, kalorier og spising	**JA/NEI**
Vansker med venner	**JA/NEI**
Bekymring, engstelse og angstsymptomer	**JA/NEI**
Perfeksjonisme og høye idealer	**JA/NEI**
Bekymring for vekt	**JA/NEI**
Vansker på skolen	**JA/NEI**
Tristhet og depressive symptomer	**JA/NEI**
Bekymring for utseende og figur	**JA/NEI**
Å håndtere vanskelige følelser	**JA/NEI**
Følelse av å miste kontroll	**JA/NEI**

Annet:

Kunne du sagt litt om hvorfor du tenker vi bør fokusere på_____?

Hva tenker du en digital behandling for spiseforstyrrelser bør inneholde?

Kunne du sagt litt om hvorfor du tenker vi bør fokusere på _____?

Tror du digital behandling kan gjøre hverdagen lettere for ungdom med spiseforstyrrelser?   JA/NEI

Hvis JA: På hvilken måte?

Hvis NEI: Kunne du sagt litt om hvorfor ikke?

Mange som har en spiseforstyrrelse kan synes det er vanskelig å søke hjelp og ta imot behandling. Tror du en digital behandling kan være med å øke motivasjonen for behandling?   JA/NEI

Hvis JA: På hvilken måte?

Hvis NEI: Kunne du sagt litt om hvorfor ikke?

Andre ting som kan være lurt at vi tenker på når skal lage en digital behandling for ungdom med spiseforstyrrelser?

Er det noen ting en digital behandling for ungdom med spiseforstyrrelser ikke bør inneholde?

Kartlegge brukernes interesse knyttet til digital behandling

Jeg vil nå lese opp fire eksempler på hvordan en digitale behandling for spiseforstyrrelser kan se ut:

- En app hvor ungdommen kan lære om spiseforstyrrelsen, føre matdagbok, registrere vekt, legge inn hjemmeoppgaver etc.
- En app hvor ungdommen kan chatte med terapeuten.
- En app hvor en i en virtuell virkelighet (VR-briller) kan gjøre atferdseksperiment, f.eks. teste ut ulike hypoteser/antakelser når en handler på butikken, spiser lunsj på skolen, spiser med familien, spiser «forbudt» mat osv.
- Et dataspill hvor en gjennomgår ulike level, hvor en eksponerer seg for angstfremkallende situasjoner knyttet til relaterte forhold ved spiseforstyrrelsen, eks. perfeksjonisme, lav selvfølelse.

Hvis du skulle rangert disse alternativene fra 1-4 etter hvor relevant du tenker behandlingen kan være for ungdommer spiseforstyrrelser, hvilken rekkefølge ville du rangert dem i?
Vil du at jeg skal lese alternativene en gang til?

Kunne du sagt litt om hvorfor du rangerte _____ øverst?

Kunne du sagt litt om hvorfor du rangerte _____ nederst?

Helt tilslutt; Er det noe vi har glemt å spørre deg om?

Er det noe du ønsker å spørre meg om?

Tusen takk for kjempe gode innspill. Dette vil hjelpe oss mye i den videre utviklingen!

Appendix B

Information Poster