



## Acceptability and feasibility of a messenger-based psychological chat counselling service for children and young adults (“krisenchat”): A cross-sectional study

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### ARTICLE INFO

#### Keywords:

Online intervention  
E-mental health  
Text-based  
Messenger  
Children  
Young adults

### ABSTRACT

**Background:** Adolescence represents a vulnerable period to experience personal crises or mental health problems. However, many concerns stay unnoticed due to the hesitance of young people to seek help and the unavailability and inaccessibility of appropriate help services. Contemporary interventions have been developed incorporating with target group specific needs and preferred modes of communication. *krisenchat* (German for “crisis chat”) is a German low-threshold chat-based psychosocial crisis counselling service that is available around-the-clock. Despite the growing number of online support services, there is a dearth of research regarding the acceptability, usability, and feasibility. **Methods:** The present cross-sectional study analyzed retrospective anonymous data on sociodemographic variables, utilization behavior, and user satisfaction of all *krisenchat* users between May 2020 and July 2021. Predictors of user satisfaction were identified using exploratory multiple regression analysis. Subgroup analyses were conducted using chi-square-tests to identify differences in user satisfaction.

**Results:** Data of  $N = 6962$  users was included in the analysis. More than 50% of those reported not having contacted the professional health care system before. The mean user of *krisenchat* was 17 years old ( $M = 16.6$ ,  $SD = 3.5$ ), female (female: 83.4%, male: 14.7%, diverse: 1.8%), and first approached the service at 4 PM ( $M = 4:03$  PM,  $SD = 5:44$  h). More than 60% of the users contacted the service between 4 PM and 12 AM, 10% even between 12 AM and 8 AM. The most frequent chat topics were concerns regarding psychiatric symptoms (60.1%), psychosocial (34.0%) or emotional distress (30.2%). The majority of the users (64.7%) reported high levels of satisfaction and 88.3% a high likelihood (60% or more) of recommending *krisenchat* to others. Also, the results indicate that the number of messages and their respective length differed between users and counsellors, with users writing several, but shorter messages and counsellors replying with fewer, but longer messages.

**Conclusion:** The results of the present study imply a high acceptability and feasibility of *krisenchat*. Overall, there is a high need for a 24/7 messenger-based chat counselling service in crises for children and young adults. Currently, there is no other online service for youth that is available after 7 PM or at weekends, which indicates the great importance of *krisenchat* and its function to bridge a current gap in the mental health care system. A need for further research emerges e.g., for subgroup differences regarding utilization patterns and also for further insights regarding help-seeking behavior via social media in youth.

**Study registration:** DRKS00026671.

**Abbreviations:** KIGGS, Studie zur Gesundheit von Kindern und Jugendlichen in Deutschland (German for: cohort longitudinal study on the health of children, adolescents and young adults in Germany); LGBTQIA+, acronym for lesbian, gay, bisexual, trans, queer, intersex, asexual and other identities.

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<https://doi.org/10.1016/j.invent.2022.100508>

Received 8 December 2021; Received in revised form 7 February 2022; Accepted 10 February 2022

Available online 12 February 2022

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## 1. Introduction

Adolescence is known as a vulnerable period due to the biological, social, and emotional developmental changes and challenges young people experience. In addition to conflicts in school, with family, friends, or in romantic relationships, research shows that adolescence is the most vulnerable time in which mental disorders develop and manifest (Dahl, 2004; Solmi et al., 2021). Moreover, population-based studies reported that half of the individuals in the age group between 12 and 25 years experience mental health problems (Kessler et al., 2007). The largest epidemiological survey investigating the general health of children and adolescents in Germany (KiGGS) showed that at least 20% of all participants from 0 to 17 years reported mental health problems (Robert Koch-Institut, 2018) and the World Health Organization (WHO) postulates that up to 20% of all children and adolescents worldwide suffer from mental disorders (WHO|Regional Office for Africa, 2003).

Research shows that adolescents' quality of life is more likely to be negatively affected by mental health issues than by physical illness (Hölling et al., 2008). It has been documented that adolescent mental health problems run a higher risk of chronification resulting in higher levels of functional impairment. This underlines the long-term impact of early-onset (Kim-Cohen et al., 2003). Therefore, adolescence appears to be an important time to implement targeted interventions to reduce both short-term and long-term consequences (Fryers and Brugha, 2013; Pine and Fox, 2015). However, the findings of the KiGGS study and other studies show that 70% of children and adolescents with mental health problems do not seek professional help (Andrews et al., 2001). As a consequence, many burdens stay unnoticed and unaddressed, as many young people are hesitant to seek professional help (Rickwood et al., 2005). The main reasons include a fear of stigma, inhibiting beliefs in the close family environment, and an expected or experienced inaccessibility of the public health care system due to for example cultural barriers. Additional identified help-seeking barriers include low levels of self-reliance and structural factors such as distance to the location of the service, high costs or long waiting lists (Aguirre Velasco et al., 2020; Pretorius et al., 2019; Rickwood et al., 2005).

Studies on young people's problem-solving preferences report that they have a strong need for autonomy and believe they should solve their problems self-reliantly (Wilson et al., 2011). In line with such findings, research shows that young people affected by mental health problems are more likely to reach out for informal than formal support (Rickwood et al., 2005). Informal support is defined as supportive agents with whom individuals already share a social relationship, such as family members or peers, whereas formal support refers to any professional support services.

The high prevalence of experiencing various difficulties or mental health problems in adolescence combined with a high need for self-reliance suggests that adolescents use the internet to find their own way of coping and reaching out for support (Fukkink and Hermanns, 2009; Gowen, 2013). For many adolescents utilizing knowledge gain as a coping strategy, searching the internet also serves as an easily accessible and everyday use tool (Subrahmanyam and Šmahel, 2011). The latest annual and representative report evaluating young people's media use in Germany showed that 94% of all adolescent internet users get access via smartphones, and a quarter of the sample used the internet for communication purposes, with 94% of the participants stating that they use WhatsApp as their primary communication tool (Feierabend et al., 2020).

Various online support services, such as chat counselling, have been developed in recent years (Chambers et al., 2018; Fukkink and Hermanns, 2009; Kauer et al., 2014; Watling et al., 2021). Studies show that children and adolescents searching for online support report high levels of distress, in some instances even higher levels than children and adolescents who seek support in services with face-to-face settings (Downing and Rickwood, 2016; Sefi and Hanley, 2012). Comparative studies

identified that more sensitive topics are brought up in online chat-counselling compared to verbal sessions in face-to-face settings or on the phone (Callahan and Inckle, 2012; Hanley et al., 2017). Despite the growing number of online support services, recent reviews still conclude that there is a high need to evaluate such services (Hoffberg et al., 2019; Kauer et al., 2014; Mathieu et al., 2021).

Hence, this study aimed to investigate the acceptability, usability, feasibility, and user satisfaction of *krisenchat* (German for "crisis chat"), an online psychosocial crisis counselling service for children, adolescents, and young adults in Germany. Differing from most other crisis counselling services in Germany, *krisenchat* delivers its counselling service via WhatsApp, an instant messaging service, as well as SMS. To examine the acceptability, usability, and feasibility of *krisenchat* and to examine potential predictors of user satisfaction, the present study used retrospective anonymous data of chat users, including an anonymous questionnaire on user satisfaction.

## 2. Materials and methods

### 2.1. Description of the *krisenchat* counselling service

*krisenchat* (<https://www.krisenchat.de>) is a messenger-based psychosocial crisis chat counselling service based in Germany with a focus on children, adolescents, and young adults under the age of 25. *krisenchat* can be contacted free of charge, pseudonymously, and 24/7 via WhatsApp or SMS. Users' telephone numbers are saved with a masked pseudonymized chat-ID to identify returning users and provide counsellors with information collected during previous sessions. Counsellors have no access to the telephone numbers themselves or the database where this data is stored as they access chats via a specialized web-application from their browser. The platform can only receive text messages, while voice, video or image files cannot be sent.

As a low-threshold counselling service, counsellors at *krisenchat* aim to listen to, calm, and comfort users in times of acute crisis. Counsellors engage in collaborative problem-solving, emphasizing that chat users can self-effectively find their own solutions. However, if necessary, chat users are also referred to local and more specific support services.

*krisenchat* counsellors are volunteers with a background in psychology, psychotherapy, education, or social work who underwent a minimum of 2 months of a structured training program in chat-based counselling. Counsellors are specifically trained not to screen for clinical diagnoses, but monitor chats for acute suicidality, child welfare endangerment, and other acute threats.

If the counsellor suspects such an acute threat, the chat is handed over to an internal on-call expert team, which evaluates the threat and formulates a strategy for the further counselling process. In case of a non-acute child welfare risk, the case is handed over to an internal child protection team for further check-up and potentially offering specialized counselling to transfer the case to the child welfare system. The legal definition of child welfare endangerment in Germany includes children and adolescents up to the age of 18 years. Child welfare endangerment is a legally reportable offense and therefore protective measures may be initiated. In cases of acute emergency (e.g., physical threat), users may be asked to provide an address or their current location and other personal information. All personal information is deleted after the respective emergency service has been notified.

In total,  $N = 445$  counsellors (age:  $M = 34.5$ ,  $SD = 11.7$ ) have volunteered at *krisenchat* since its launch in May 2020. Based on the sample of currently active counsellors ( $N = 219$ ), 87.6% are female and 12.4% are male. The volunteers provide crisis counselling in 2-h-long shifts. Counsellors are encouraged to cover at least one shift per week and have no limitations on the maximum number of shifts per week. Due to the shift system, it is possible that users chat with multiple counsellors during the course of one consultation. Depending on the case, users may or may not be made aware of the change in counsellors. Counsellors may take on as many conversations as they personally feel confident with at a

particular moment in time.

A chat session is defined as a series of messages sent by a *krisenchat* user with no gaps between consecutive messages of more than 12 h. *krisenchat* can proactively contact users within a 24-h window following users' last message. After that, only the user is able to initiate contact again. On average,  $n = 85$  counsellors ( $SD = 30.6$ ) per week were active engaging in a mean of 524.6 chat sessions ( $SD = 368.0$ ) per week, of which  $M = 252.1$  ( $SD = 262.7$ ) sessions were from new users. Data regarding counsellors have been derived from the operational company database.

## 2.2. Participants and procedure

For the purpose of this cross-sectional study, anonymized data from all chat users between May 17, 2020 and July 30, 2021 was extracted from the operational database. The data included automatically-collected metadata on each chat (e.g., date and duration of the session in form of timestamps) and information collected and rated by the counsellors. Starting in September 2020, deliberate user feedback was inquired through an automatically sent survey invitation after the first chat session. Users received the invitation including a link to the survey via the chat 6 h after counselling if chats contained at least 30 messages and were not considered at-risk by the psychological team. In case users attended more than one session, they only received the survey once after the first session. The survey was set up in German using *typeform* (<https://www.typeform.com>). Informed consent was inquired via an opt-in function before survey participation. The Ethics Committee of the Medical Faculty, University of Leipzig, waived ethical approval for this study because of the anonymity of the data (08-03-2021).

Overall, data of  $N = 11,031$  users was extracted from the database. Of those,  $n = 7393$  were invited to participate in the survey. Data was excluded in the final analysis if counsellors marked the chat protocol as being a "fake chat" ( $n = 115$ , 1.0%), i.e., if a user did not contact the service because of an ongoing crisis or problem. Other criteria for exclusion were an age under 6 or over 25 years ( $n = 2414$ ; 21.9%), no topics identified by counsellors (e.g., if users contacted *krisenchat* without problems indicating the need for a consultation, or due to missing data,  $n = 1539$ ; 14.0%) or no response by counsellors ( $n = 1$ ; 0.0%). After data clean-up, data of  $n = 6962$  (63.1%) users remained in the final analysis. Among these,  $n = 6113$  (87.8%) were invited to participate in the subsequent survey. The survey was completed by  $n = 2762$  (45.0%) of those who were invited.

## 2.3. Measures

The current study used automatically-collected metadata as well as data collected and rated by the counsellors during or after the sessions to evaluate utilization and utilization behavior. Data acquired through the feedback survey was used to evaluate user satisfaction.

### 2.3.1. Utilization

The date of first and last contact, the total number of counselling sessions as well as the total number of user-sent messages were automatically collected as metadata for each user. Counsellors collected information on the topic(s) of the counselling session and reported symptom patterns (see Table 1). Information regarding the name or pseudonym the users would like to be addressed with, users' age, gender, and already existing connections to professional help providers was also collected if users shared this information during a session. Counsellors collected information regarding the progress and the specifics of the consultation during each session. Additionally, users participating in the feedback survey were asked to provide information on prior use of professional help services through which channel (e.g., TikTok, recommendation) they learned about *krisenchat*.

**Table 1**

Chat categories and included topics.

Category	Included topics
Psychiatric symptoms	Self-harm, suicidal ideation/suicidality, addictive behavior, eating disorder symptoms, flashbacks, anxiety, obsessive-compulsive behavior
Psychosocial distress	School-related problems, mobbing and bullying, family related problems, relatives' mental health, high expectations
Emotional distress	Grief, lovesickness, anger, loneliness
Violence	Violence
Sexual harassment	Sexual violence, sexual harassment
COVID-19	COVID-19
Child welfare endangerment	Child neglect, child abuse
LGBTQIA+	LGBTQIA+

### 2.3.2. User satisfaction

Different aspects of user satisfaction were evaluated using two items. Item 1 ("Was *krisenchat* able to help you with your concerns?") ascertained user satisfaction on a 5-point Likert scale ranging from 1 = "not at all" to 5 = "very well". Item 2 asked users to estimate how likely they were to recommend *krisenchat* via Net Promoter Score, ranging from 0 = "unlikely" to 10 = "extremely likely" (Reichheld, 2003). To compute the recommendation rate, we recoded the variable assessing the likelihood of recommending *krisenchat* into a binary variable. Every participant who responded with a score of 6 or higher was assumed to be willing to recommend *krisenchat* to others.

## 2.4. Statistical analysis

Statistical analyses were performed using IBM SPSS Statistics version 27.0. A two-tailed  $\alpha = 0.05$  was applied to statistical testing. Descriptive statistics were performed for chat metadata, sociodemographic variables, and variables assessing utilization and user satisfaction. Chi-square tests were used to compare subgroup differences. For this purpose, gender differences were computed regarding utilization, that are chat topics and current or prior use of professional help services, user satisfaction, and the likelihood of recommendation. Eight separate chi-square-tests were conducted post-hoc to identify gender differences for each chat topic. A Bonferroni correction was used to account for multiple testing. In the results, if not indicated otherwise, none of the expected cell frequencies were below 5 in any of the performed chi-square tests.

Furthermore, an exploratory multiple regression analysis was used to identify potential predictors of user satisfaction. To reduce the number of potential predictors, related chat topics were aggregated into problem categories (Table 1). Besides the different chat topic categories, gender, age, the number of sessions, the mean number of words per message, and the mean number of messages per session, the total number of sessions, the time of first contact as well as current and prior professional help services were entered as predictors into the model. All predictors were entered simultaneously. User satisfaction (operationalized via the item "Was *krisenchat* able to help you with your concerns?") was considered the dependent variable.

## 3. Results

### 3.1. Sample description

Sociodemographic characteristics are displayed in Table 2. Of the  $N = 6962$  participating users, 85.9% disclosed their gender. Of those, 83.4% were female, 14.7% male, and 1.8% diverse with an age range of 7 to 25 years ( $M = 16.6$ ,  $SD = 3.5$ ). About 17.2% of users partaking in the feedback survey had used other hotlines or professional support before their first *krisenchat* session. In total, 20.7% of all users reported current use of professional help services while also receiving counselling

from *krisenchat*.

### 3.2. Utilization

On average, users attended  $M = 3.8$  ( $SD = 6.2$ ) *krisenchat* sessions, while the median session count was  $Mdn = 2.0$ , with almost two-thirds of all users (63.4%) attending more than one session. In addition, 3.2% of all users were identified as being frequent users, making an above-average use of capacity with 16.3 (equals 2  $SD$  above  $M$ ) sessions or more. Further descriptive statistics regarding the metadata of the chats are displayed in Table 2. The majority (60.8%) of users approach *krisenchat* between 4 PM and 12 AM for the first time, 27.9% between 8 PM and 12 AM and 10.1% between 12 AM and 8 AM. The mean time of attending the first session was  $M = 4:03$  PM ( $SD = 5:44$ ) with an  $Mdn = 5:42$  PM.

Considering the message count of the users during a session, the mean was  $M = 23.9$  ( $SD = 19.3$ ), while the median was  $Mdn = 19$  and a range of 1.50 to 337. Regarding the word count per message of users, the mean was  $M = 17.0$  ( $SD = 10.7$ ), while the median was  $Mdn = 14.2$  and a range of 1.6 to 102.5. In addition, metadata of the chats was also considered for the counsellor. Counsellors sent an average of  $M = 18.2$  ( $SD = 13.6$ ,  $Mdn = 15.0$ ) messages per session with a mean word count of  $M = 25.2$  ( $SD = 10.2$ ) per message, while the median was  $Mdn = 23.4$  and a range of 4.3 to 128.8 words per message.

The most frequent topics identified by counsellors were psychiatric symptoms (60.1%), psychosocial distress (34.0%), and emotional distress (30.2%). Furthermore, in 39.5% of the cases, counsellors identified more than one topic category in the contents of a user's chat. The most commonly named sources where users learned about *krisenchat* were the social media platform TikTok (25.5%), through a Google search (18.2%) or a personal recommendation (16.0%).

**Table 2**

Sample characteristics regarding sociodemographic information and chat utilization ( $N = 6962$ ).

Variable <sup>a</sup>	
Gender, $n$ (%)	
Female	4988 (83.44)
Male	881 (14.74)
Divers	109 (1.82)
Age, $M$ ( $SD$ )	16.55 (3.45)
Session count in total	26,614
Mean session count per user, $M$ ( $SD$ )	3.82 (6.24)
Mean number of messages per session, $M$ ( $SD$ )	23.92 (19.33)
Range	1.5–337
Mean word count per message, $M$ ( $SD$ )	
Chat user	16.97 (10.72)
Range	1.6–102.5
Counsellor	25.16 (10.22)
Range	4.3–128.8
Frequent users, $n$ (%)	222 (3.2)
Chat topics categories <sup>b</sup> , $n$ (%)	
Psychiatric symptoms	4184 (60.1)
Suicidal ideation	1444 (20.7)
Psychosocial distress	2370 (34)
Emotional distress	2101 (30.2)
Violence	567 (8.1)
Sexual harassment	415 (6.0)
COVID-19	586 (8.4)
Child welfare endangerment	376 (5.4)
LGBTQIA+	271 (3.9)
Number of chat topics, $M$ ( $SD$ )	1.56 (0.82)
Range	1–7
Specialized child welfare counselling <sup>c</sup> , $n$ (%)	305 (4.4)
Prior use of professional help services, $n$ (%)	1197 (52.6)
Current treatment or intervention, $n$ (%)	1440 (20.7)

<sup>a</sup> Calculation of % from valid cases.

<sup>b</sup> Multiple answers were possible.

<sup>c</sup> Further specialized counselling was performed by an internal on-call expert team in case of an acute threat.

Chi-square-tests were used to compare subgroup differences. First, gender differences concerning chat topics, current use of professional help services, and high frequency of use of *krisenchat* were analyzed. Due to missing data on gender, the following analyses relating to gender differences are based on a reduced sample size of  $N = 5978$ .

Overall, the results indicated significant gender differences between chat topics,  $\chi^2(14) = 749.6$ ,  $p < .001$ ,  $V = 0.25$ . Post-hoc comparisons showed that users contacting *krisenchat* with topics concerning psychiatric symptoms,  $\chi^2(2) = 21.1$ ,  $p < .001$ ,  $V = 0.06$ , emotional distress,  $\chi^2(2) = 23.8$ ,  $p < .001$ ,  $V = 0.06$ , violence,  $\chi^2(2) = 21.7$ ,  $p < .001$ ,  $V = 0.06$ , or sexual harassment,  $\chi^2(2) = 24.0$ ,  $p < .001$ ,  $V = 0.06$ , were significantly more likely to be female. Moreover, users voicing concerns on LGBTQIA+ issues were significantly more likely to identify as diverse,  $\chi^2(2) = 791.5$ ,  $p < .001$ ,  $V = 0.36$ .

Furthermore, the results revealed a significant difference between gender and current use of professional help services,  $\chi^2(2) = 26.7$ ,  $p < .001$ ,  $V = 0.07$ . Of those who were currently receiving professional help, 85.5% were female and 11.4% were male. There were also significant gender differences among frequent users of *krisenchat*,  $\chi^2(2) = 7.2$ ,  $p = .03$ ,  $V = 0.03$ , with 88.4% of those categorized as frequent users being female, and 8.8% being male.

### 3.3. User satisfaction

In total,  $N = 2781$  users participated in the survey on user satisfaction after the counselling. Overall, more than half of those were satisfied with the counselling service of *krisenchat*: 64.7% of the participants rated the ability of *krisenchat* to help them with their concerns as “well” or “very well”. Furthermore, the computed recommendation rate was 88.3%. Additional chi-square-tests showed that no gender differences were found regarding user satisfaction,  $\chi^2(8) = 8.6$ ,  $p = .37$ , and likelihood of recommendation,  $\chi^2(2) = 4.1$ ,  $p = .13$ .

### 3.4. Factors influencing user satisfaction

Finally, an exploratory multiple regression analysis was conducted to examine potential predictors of user satisfaction. While a significant regression equation was found,  $F(20, 2244) = 3.16$ ,  $p < .001$ , the explained variance was small, with  $R^2 = 0.03$  and adjusted  $R^2 = 0.02$ . A further interpretation of the resulting model and the regression coefficients was therefore not undertaken.

## 4. Discussion

### 4.1. Principal results and comparison with prior work

The results of this study show that the existing service is highly acceptable, feasible and the majority of users were highly satisfied. Further, the available data confirm the low barriers to access *krisenchat*: about half of the users that participated in the survey indicated that *krisenchat* was the first mental health support service they had ever contacted. This also indicates that there is a high need for a messenger-based chat counselling service for young people in Germany.

The evaluated usage data with  $N = 6962$  users and 26,614 chat sessions between May 2020 and July 2021 show a high utilization rate. More than 60% of the users contacted the service between 4 PM and 12 AM, while roughly 10% of the users contacted the service between 12 AM and 8 AM, which shows the need for a direct, around-the-clock available service. Currently, there is no other online service especially for children and young adults that is available after 7 PM or at weekends.

As can be assumed from the literature, anonymous chat communication is particularly suitable for addressing very difficult topics such as suicidal thoughts (which were addressed by 20% of all users) or experiences of violence and sexual harassment (14.1% of the *krisenchat* users) (Suler, 2004). Together these topics account for over one third of all requests addressed at *krisenchat*. In  $N = 376$  (5.4%) chats, the



counsellors indicated a child welfare endangerment and in 304 cases (4.4%) the child welfare team indicated a child maltreatment and conducted a specialized child protection counselling.

Over 60% of users report psychiatric symptoms like depressive or anxiety symptoms or self-harm. The significant gender differences, which correspond with a small ( $V = 0.1$ ) to medium ( $V = 0.3$ ) effect size according to Cohen (2013), in these topics (psychiatric symptoms, emotional distress, self-harm, and suicidality) represent the gender-specific prevalences found in the literature in the respective age group (Hölling et al., 2014). In terms of gender differences, this study also highlighted the small sample size of male users (14.7%). Adding to previous reports of other German online counselling services, a fundamental underrepresentation of male users in the use of online support services can be concluded in spite of low-threshold access (Hoghe et al., 2020; jungundjetzt, 2019; Nummer gegen Kummer e.V., 2020; Zenner and Oswald, 2006). However, the low incidence of young men seeking help is not an uncommon occurrence. Research shows that young men experience aversive emotions such as discomfort, fear, embarrassment and shame when asking for help (Gonzalez et al., 2005; Hernan et al., 2010). Other findings suggest that gender socialization and ideals hinder help-seeking (Gonzalez et al., 2005; Nam et al., 2010). Considering the Social Identity Theory (SIT; Tajfel and Turner, 2004), which outlines that the (male) self-concept is derived from the perceived membership of a social group and is decisive for one's pride, self-esteem, social identity and positive-self-image, it seems recommendable to advertise help-seeking as acceptable and compatible with the male in-group identity. Besides the recommendation that mental health literacy programs should be included into school curricula, a study on possible solutions to improve help-seeking among young men showed that help-seeking promoted as a solution-oriented, positive mental fitness skill development can increase engagement in mental health focused services (Lynch et al., 2018). Taking into account the preferred informal relationship of young men when it comes to seeking help and the importance of an in-group compatibility, cooperation with already existing communities (for example in forums or with male role models who have a large established community in social media, e.g., influencers, etc.) could meet this need. Overall, it is commendable to promote with the aim to educate, share, and encourage open conversations about mental health in young men and reframe help-seeking behavior as a genderless trait (Lynch et al., 2018). Thus, further research is needed to explore the accessibility of male help-seekers in order to bridge the gap into the health care system.

Despite its free of charge, anonymous and low-threshold nature through WhatsApp messenger, the low number of non-serious requests for advice (1.0%) confirms that the service is perceived as serious overall. The vanishingly low usage figures via SMS (0.6%) show that psychosocial counselling via WhatsApp is a trustworthy form of communication for the target group of children and young adults.

The results of the metadata analysis confirm findings from other studies on help-seeking behavior of children and young adults, according to which anonymity, autonomy, and informal access in seeking help are preferred (Rickwood et al., 2015). The most commonly named sources where users learned about *krisenchat* were the social media platform TikTok (25.5%), Google search (18.2%) or personal recommendation (16.0%). Due to the fact that in August 2020, *krisenchat* used TikTok as a marketing tool for the first time, the majority of TikTok recommendations can be assigned to peer-to-peer recommendation of influencers, which emphasizes the informal help-seeking behavior through social media and peer recommendation (Rickwood et al., 2015).

A very important result of this study and indicator for the potential ability of *krisenchat* to lower the barriers to access help is that about 50% of those contacting *krisenchat* reported that they never had contact with the professional health care system before. Further, the results show that the service fits the needs and expectations of the target group, which is indicated by the very high user satisfaction rates and the reported recommendation rate of nearly 90%, as well as the fact that nearly 20%

of all users have contacted *krisenchat* based on personal recommendations and, finally, the continued use of the service by more than 60% of the users.

Additionally, the analysis of the content of the chats shows that users turn to *krisenchat* with a wide range of topics, concerns and problems. However, no correlation could be detected between concerns of the chat users and their satisfaction with the counselling service, suggesting that chat counselling is suitable for different subject areas, and furthermore, that the quality of counselling, as well as the user satisfaction, is high regardless of the concern.

The satisfaction seems to be independent of the length and frequency of the chat consultation: the data show a wide variety of the mean message count of the users during a session ( $range = 1.5$  to 337) and of the mean word count per message of users ( $range = 1.6$  to 102.5). Furthermore, the descriptive analysis shows that users of *krisenchat* tend to write more and shorter messages, whereas counsellors reply with fewer, longer messages. This finding is in line with previous literature, which indicates that sessions with more text volume, but fewer messages are more effective (Sindahl and van Dolen, 2020). As literature on other available (phone or chat) help lines show, a group of frequent users (in this case chatters) is also found in this present study (Pirkis et al., 2016). Initially, in this study, this group is measured by average session count and its required capacity of the counsellors. In order to provide tailored counselling for users with higher need of contact, further research is needed.

#### 4.2. Strengths and limitations

To the best of our knowledge, this study is, as of yet, the only effort to utilize supply data in assessing the utilization behavior of a messenger-based chat counselling service among German speaking youths and young adults. Despite this, several limitations need to be accounted for. In particular, the retrospective study design relied on convenience sampling. The resulting gender bias limits the generalization to more mixed-gender populations. Moreover, data was partially not complete. Regarding data collection, the measurement instruments on user satisfaction were not standardized.

#### 4.3. Conclusions

Notwithstanding the limitations of this study, the present results evidence an overall high acceptance and feasibility of an offer such as *krisenchat*. This is emphasized by a high user satisfaction. Messenger-based chat counselling seems to be a suitable offer to counsel adolescents in crises and might bridge the gap between need and low-threshold first access to the health care system. Thus, it can be concluded that there is a high need for a 24/7 messenger-based chat counselling service in crises. Despite the high user satisfaction of the current service of *krisenchat*, there is a need for further research in terms of significant differences in usage behavior and differences in chat topics (such as suicidal ideations or help-seeking of male population). Furthermore, a need for research on help-seeking behavior via social media (especially TikTok) and in cases of targeting subgroups (for example child welfare, abuse, violence) is given. Finally, a further in-depth look into the qualitative characteristics of effective chat counselling appears important in order to develop tailored counselling strategies for different concerns.

#### Declaration of competing interest

ME, ZE, LG, SB, KK, RW, JT, SS, EK confirm no conflicting interests. CRK received lecture honoraria from Recordati and Servier outside and independent of the submitted work.

## Acknowledgements

We acknowledge support from Leipzig University for Open Access Publishing.

## CRedit authorship contribution statement

ME, EK and CRK designed the study. ZE, LG and SB performed the statistical analysis. ME and ZE drafted the article. SS, JT and RW prepared the data set and edited previous versions of the manuscript. ME, ZE, SB, EK, KK and CRK discussed the results and contributed to the final manuscript. All authors have approved the final manuscript.

## Funding

This work was supported by The Federal Ministry of Health (ZM11-2521FEPO01).

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