Pilot study: feasibility of using the Suicidal Ideation Questionnaire (SIQ) during acute suicidal crisis

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Abstract

Background: Assessing youths in acute suicidal crisis is a common and pivotal task in child and adolescent psychiatry, usually relying primarily on the clinician’s skills of assessment. The objective of this pilot-study was to evaluate feasibility and usefulness of questionnaires during assessment of youths in acute suicidal crisis.

Method: 31 adolescents, presenting for suicide assessment, and their caregivers, were asked upon emergency presentation to fill in the Suicidal-Ideation-Questionnaire (SIQ) and the Youth Life Status Questionnaire (Y-LSQ) before receiving an assessment by a clinician. The SIQ has 30 items, 8 of which are defined as critical items able to predict suicidality with the highest probability. The Y-LSQ (30 items) measures the overall level of psychological distress. It has one suicidal item, which was used in this study for validation of the SIQ result. Clinical judgment and test results were collected and analyzed by an independent researcher.

Results: It was feasible to ask adolescents in acute suicidal crisis to fill in a questionnaire. Clinical assessment of suicidality did not correlate significantly with the overall SIQ-score (p = 0.089), however there was a significant correlation between the SIQ 8 critical item result and clinical judgement of suicidality (p = 0.050).

Conclusion: The 8 critical SIQ items can be used to support clinical judgment of suicidality in acute crisis.

Keywords: Suicidal ideation, Suicidal ideation questionnaire, Suicide risk assessment, Suicidality, Youth-life status questionnaire

Background

Suicide is the second to third leading cause of death in adolescents aged 15 to 24 years [1,2]. Risk-assessment in youths presenting with suicidal ideation is therefore a frequent and pivotal task in child and adolescent psychiatry. Reported self-harm, suicidal ideation, and previous suicide attempts have to be taken seriously as they are most highly associated with later suicide, prior attempts being the most predictive stable factor; plans and preparations the most predictive accurate factor [3]. Suicidal ideation therefore has to be always assessed thoroughly [4-6]. Females are more likely to report suicidal ideation and behaviour [7], while males are more likely to complete suicide [8].

Many risk factors have been identified in the past: Personal factors [9], family factors [9,10], presence of mental illness [11]. However a specific set of symptoms that most accurately predicts suicidal behaviour has not yet been found [12].

The use of standardized methods during assessment to classify the spectrum of suicidal ideation and behaviour as well as risk factors present is recommended [13] but not always routinely done.

A vast array of instruments have been designed to measure various aspects of suicidal ideation, acute risk of suicide and differentiate non suicidal selfharm from selfharm with suicidal intent. Well assessed screening instruments are available (e.g. Selfharm Behaviour Questionnaire [14], Columbia Suicide Screen [15], The Risk of Suicide Questionnaire, Suicide Risk Screen [16], Suicide Probability
Suicidal Ideation Questionnaire (SIQ)

The SIQ [21] is a self-report instrument for suicidal ideation, appropriate for ages 14.0 to 17.11. As one component in a comprehensive assessment of adolescent mental health, it can serve as a professional as an initial source of information. It does not predict suicide in itself [18], however, it has been shown to be a moderately to highly sensitive marker of possible subsequent suicide attempts and broad suicidality [22]. It has a 98% sensitivity, 37% specificity, and a 55% positive predictive value [23]. For the total SIQ standardization sample (n = 890) internal consistency reliability estimates rank uniformly high from .969 to .974, with a total sample reliability coefficient of .971. [21,24,25]. Content validity for the SIQ items ranges from .70 to .90, with a median correlation of .78 for the total sample.

The SIQ has 30 items, ranging from very minor/nonspecific thoughts (e.g., I wish I was never born) to major/specific thoughts (e.g., I thought of when I would kill myself). Each item on the SIQ begins with “I thought…”, “I wondered…”, “I wished…”. The respondent is asked to choose from a 7-point continuum (between “Almost every day” to “Never had this thought”) to assess the frequency of that particular thought within the last month. A high score on the SIQ is indicative of frequent and pervasive suicidal ideation. Scores and items can be used in four basic ways: total score, cut-off scores, critical item review, or clinical perusal of individual items. Cut-off score for the SIQ is a sum of 41 and higher, indicating the need of further evaluation of psychopathology. 8 “critical items” are defined, which predict self-destructive behaviour best. If an adolescent scores 5 or 6 on more than three of these items he/she is considered to be at higher risk for suicide irrespective of the total SIQ-score [21]. The 8 items are presented in Table 1.

For the pilot study the SIQ was translated into German, a retranslation was preformed to ensure correctness of translation. To assure understandability further two questions querying understanding and straightforwardness of answers were added to the SIQ.

Suicide Risk Checklist

The suicide-risk-checklist, resembles an adaptation of the semi-structured instrument “Tool for Assessment of Suicide Risk” (TASR). TASR is neither a diagnostic tool since suicide is a behaviour rather than a medical diagnosis nor a predictive tool as there exists no tool that has been shown to predict reliably suicide [12]. It is a standardized checklist which, embedded in a broader framework of assessment (e.g., mental status exam), allows professionals to assess the risk for youth suicide by...
following a standardized evaluation of the most common risk factors known to be associated with suicide in young people. Risk factors are grouped in (1) individual risk profile (e.g. male, age, family history...), (2) symptom risk profile (e.g. hopelessness, worthlessness, anger, impulsivity...) and (3) interview risk profile (e.g. suicidal ideation, attempted or planned suicide, recent alcohol/drug abuse, access to lethal means, unsolvable problems). Individual-risk-profile items weigh 1 point, symptom-risk-profile items 2 points and interview-risk-profile items 3 points. The score indicates high, medium or low suicide risk.

The questionnaires were translated from English into German, re-translation by a native speaker proved to be reliable for each item.

Procedure
The study was conducted in compliance with the Helsinki Declaration and approved by the Ethical Committee of the University of Ulm (145/19) in August 2010. All clinicians working on-call were trained in administering the suicide-risk-checklist.

Inclusion criteria for participants were: (1) age ≥14; (2) primary reason for referral: assessment of suicidality or self-harm; (3) parent/carer present on site; (4) written informed consent of adolescents and their caregivers. Once enrolled participants and their carers completed - before they saw the clinician - the SIQ and Y-LSQ. After handing in the questionnaires to a nurse, standard psychiatric assessment for suicidality was performed by the clinician within 15–30 min (on average). Assessment lasted Ø 60 min, at the end of which the clinician filled in the suicide risk checklist. The classification of low, medium and high suicide risk was done by clinical judgement, supported by the suicide-risk-checklist. Clinicians were not aware of the SIQ or the Y-LSQ result during their assessment. The questionnaires and the standardized suicide-risk-checklist were analysed afterwards by an independent researcher.

Statistical analysis
Data was analysed using SPSS version 21.0. Cronbach's alpha was calculated to give an orientation for the internal consistency of items in der German SIQ version. Descriptive statistics were used for demographic data. Two logistic regression models were built to explore the predictive power for low or high/medium risk assessment of the SIQ score, Y-LSQ item and indication for admission as inpatient (model 1) or for the SIQ, 8 critical items score, Y-LSQ item and indication for admission as inpatient (model 2). In a third model, the predictive power of age, gender and Y-LSQ score for the SIQ score was tested.

Results
Main findings of this study are presented in Table 2 (demographic data) and Table 3 (SIQ results).

Demographic data
31 of 35 adolescents eligible participated. One adolescent did not meet the age criteria. Three youths refused (8.6%) to fill in the questionnaires, two of them, oppositional throughout, returned the questionnaires blank; one appeared to be too distressed to fill in a questionnaire. Assessment on the suicide-risk-checklist classified participants as low risk in n = 10, medium risk in n = 18 and high risk in n = 3 cases. Reasons for referral were: attempted suicide (12,9%), suicidal ideation (29%), threat of suicide (16,1%), non suicidal self injury (9,7%), self harm with suicidal intent (12,9%), other (eg alcohol intoxication) (19,4%), 48,4% presented with self harm in their history.

23 youths were admitted after assessment for crisis intervention (79,3%). Of those patients categorized as low risk group 40% (n = 4) were admitted while 90,5% (n = 19) of patients in the medium/high risk group were admitted. Discharge took place on average after 4.57 days (SD =3.59). 8 youths were discharged right after outpatient emergency assessment, receiving a follow-up appointment within one week after assessment.

Table 1 Core items of the SIQ, that form the “scale of the 8 critical items”

| No | Item                                                                 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|----|----------------------------------------------------------------------|---|---|---|---|---|---|---|
| 3  | I thought about how I would kill myself                              | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 4  | I thought about when I would kill myself                             | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 5  | I thought about people dying                                         | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 7  | I thought about what to write in a suicide note                      | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 8  | I thought about writing a will                                       | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 9  | I thought about telling people I plan to kill myself                 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 13 | I thought about how easy it would be to end it all                   | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 18 | I thought if I had the chance I would kill myself                    | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

0 = I never had this thought, 1 = I had this thought before, but not in the past month, 2 = About once a month, 3 = Couple of times a month, 4 = About once a week, 5 = Couple of times a week, 6 = Almost every day.
Main ICD10 diagnoses given were: affective disorder (F32.1/F34.1) (29.4%), conduct disorder, mixed (F92.0) (26.5%) and adjustment disorder (F43.2) (23.5%) (Table 1). There was no correlation between high suicidality and a specific diagnosis.

Table 2 Demographic data, clinical risk assessment and total SIQ score

| Suicide risk assessment (risk checklist & clinical judgement) | Low     | Medium | High | Total |
|-------------------------------------------------------------|---------|--------|------|-------|
| n                                                           | 10      | 18     | 3    | 31    |
| Age (mean)                                                  | 15.7 (SD 1.6) | 15.7 (SD 1.1) | 16.3 (SD .6) | 15.6 (SD 1.2) |
| Female/male (n)                                            | 4 / 6   | 12 / 6 | 1 / 2| 54,8% / 45,2% |
| Diagnoses (n)                                               | F32     | F41    | F43  | F60   | F90   | F91  | F92  | F92  | F94   |
|                                                           | 4       | 5      | 0    | 2     | 0     | 0    | 4    | 0    | 0     |
|                                                           | 26,5%   | 2,9%   | 2,9% | 2,9%  | 2,9%  | 2,9% | 26,5%| 2,9% | 2,9%  |
| SIQ total (mean)                                            | 53.54 (SD 39.7) | 85.18 (SD: 46.1) | 88.0 (SD: 36.5) | – |
| Selfharm prior to assessment                                | 3/10 (30%) | 11/18 (61%) | 1/3 (33%) | 15/31 (48.4%) |

Table 3 Mean and multivariable analysis for SIQ total and SIQ 8 item

|                  | Low risk (n = 10) | High risk (n = 21) |
|------------------|-------------------|-------------------|
| SIQ-range (max 180) | 0-119             | 0-151             |
| SIQ 8 item range (max 42) | 0-23             | 0-47              |
|                  | mean   | SD    | mean   | SD    |
| SIQ total         | 48.34  | 38.271| 89.61  | 41.041|
| SIQ 8 item        | 7.78   | 6.667 | 22.15  | 12.918|
| Y-LSQ             | 1.56   | 1.424 | 2.50   | 1.192 |

model 1: dependent variable: high/medium versus low risk group (adjusted $R^2 = .382$)

|                  | coefficient (95% CI) | p       |
|------------------|----------------------|---------|
| SIQ total        | .005(−.001 to .010)  | .093    |
| Y-LSQ Item       | -.048 (−.236 to .140)| .603    |
| Admission as inpatient | .588(230 to .946) | .002    |

model 2: dependent variable: high/medium versus low risk group (adjusted $R^2 = .429$)

|                  | coefficient (95% CI) | p       |
|------------------|----------------------|---------|
| SIQ 8 item       | .016(.002 to .031)   | .029    |
| Y-LSQ Item       | -.026(−.168 to .117) | .716    |
| Admission as inpatient | .557(.211 to .903) | .003    |

model 3: dependent variable: SIQ total (adjusted $R^2 = .646$)

|                  | coefficient (95% CI) | p       |
|------------------|----------------------|---------|
| Y-LSQ Item       | 24.958(16,629 to 33,386) | .000    |
| Age              | 1,497(−8,963 to 11,956) | .771    |
| Gender           | 15,797(−8,282 to 39,876) | .189    |
asserted that they answered straightforward (90.3%) and
youths found all questions understandable (71%) and
I would be better off dead
with a medium/high risk-assessment (Mdn = 22.15).
Significantly lower on the 8 critical items than youths
Youths with a low risk-assessment (Mdn = 7.78) scored
significantly lower on the 8 critical items than youths
with a medium/high risk-assessment (Mdn = 22.15).
The Y-LSQ suicide item (“I think about suicide or feel
I would be better off dead”) and the SIQ result corre-
lated significantly both on the SIQ total score as well as
on the SIQ 8 critical item score (p = .000). (Table 3)

Discussion
This study indicates that the SIQ can be used during clinical
assessment of adolescents in crisis. Youths will fill in
questionnaires before meeting the clinician. Only 3 youths
refused to participate, due to underlying symptomatic (dis-
trust, overall oppositional behaviour). That is far below the
quota of 20%, which still would be acceptable.

With an internal consistency of .97 and an average
inter-item correlation coefficient of .53 the German SIQ
version seems to reproduce the internal consistency and
inter-item correlation coefficient of the English instrument
[30]. The significant correlation of the Y-LSQ suicide-item
with the SIQ-score underlines the construct validity of the
SIQ and enhances the findings of the original research
study [21,24]. However due to the small sample size this
may only be a figure for orientation. A reliable estimation
needs a larger sample. In a larger study, it also should be
of interest, which questions youths find difficult to under-
stand. The majority of adolescents stated that they an-
swered truthfully, but only 71% asserted that they found
all questions understandable. Amount of distress, symp-
toms associated with certain diagnoses (eg schizophrenia,
autism) or wording of the items are possible explanations
and should be differentiated in further studies.

The reason for referral in this sample was suicidality
or self-harm, therefore the intention, when handing out
the SIQ, was not to screen for suicidal ideation. How-
ever, risk assessment in suicidal youths is complex. A
thorough risk assessment should therefore include sev-
eral sources of information. Youths may not disclose all
relevant information in an interview. We queried if a)

Youths are generally able to fill in a questionnaire in
acute crisis and b) if information given on the SIQ ques-
tionnaire reliably affirms clinical judgement. The lack of
Correlation between the total SIQ score and the clinical
risk assessment was surprising, but may be explainable
by several facts: (a) the small sample size; (b) different
points in time of reference: the SIQ covers suicidal ide-
ation within the past month, whilst the suicide-risk-
checklist assesses suicidality at emergency presentation;
(c) time at which information is given: the SIQ is filled
in before assessment, the suicide-risk-checklist after
assessment, about 1.5 hours later, when the actual risk of
suicidality may have already decreased; (d) self-report
data may differ from information gained in an interview:
Some studies report generally high correspondence of
these two sources of information [31] others depict low
concordance [5,32]. Safer et al. point out that reports of
suicidal ideation are up to 2–3 times more likely, when
retrieved via questionnaires than via interview [33].
Other studies report that suicidal ideation fluctuates
within short periods of time [34]. All of them stress the
importance of using different approaches to measures
the risk of suicidality accurately.

When analysing only the 8 critical items of the SIQ in
Correlation with clinical assessment the result changes: the
score of the 8 critical items on the SIQ correlates signifi-
cantly with clinical risk-assessment. This goes conform to
a study from Gutierrez and Osman [35] who demon-
strated in a large high-school as well as in a clinical sample
that the 8 critical items perform well in differentiating sui-
cide attempters from non suicidal high-school students.

Limitations
Methodological limitations to be noted are: All youths,
who were included, presented for assessment of suicid-al-
ity, the absence of non-suicidal individuals filling in the
questionnaire may have biased the results. Also, due to
the small sample, the significance of the findings is lim-
ited. The findings should be reproduced in a larger
mixed sample, comparing a school sample (in which a
lower rate of suicidal ideation is to be expected) with a
clinical sample, including all reasons for referral (with
probably a higher rate of suicidal ideation), to validate
the results. Sensitivity and specificity should be also eval-
uated for subpopulations such as restrained youths.

In addition, it has to be taken into account that youths
included were emergency presentations and evaluated by
the clinician on call. The heterogeneity of experience
and training of the clinicians may have caused a non-
homogeneous risk assessment.

Conclusions
Risk assessment in suicidal youths is complex. A thorough
assessment should include several sources of information.
The SIQ, especially the 8 critical items, which correlate well with clinical assessment, is a feasible instrument for youths in acute crisis. With caution it can be concluded that using the SIQ during assessment can complement but not replace clinical assessment. Larger samples are needed.

Competing interests
The authors declare that they have no competing interests.

Authors’ contributions
IB contributed to research design, aided in data analysis, and coordinated and drafted the manuscript; NC carried out data collection, performed data analysis and contributed to the manuscript; RS contributed to research design and to the manuscript; JMF contributed to the manuscript. All authors read and approved the final manuscript.

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