Health-related quality of life among adolescents: A comparison between subjects at ultra-high risk for psychosis and healthy controls

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ABSTRACT

At risk status for psychosis has been robustly associated with decreased health-related quality of life (HRQoL) among adults. However, this relationship has not been examined in adolescents with ultra-high risk (UHR) for psychosis in comparison to healthy controls. Twenty-seven subjects with UHR and thirty healthy controls (14–18 years of age) were recruited in a multiphase screening and accessed with a HRQoL scale of KIDSCREEN-27. Comparisons indicated that subjects with UHR had poorer mean scores at a statistically significant level in the following scales: physical well-being, psychological well-being and school environment. In a logistic regression analysis, lower scores in the scale school environment explained at risk status for psychosis. Adolescents with UHR show significantly poorer HRQoL scores than healthy peers, identified predominantly by the evaluation of the school environment. These results might be interpreted as a self-perception of early mental and social functioning impairments, which seem to be recognized initially based on school demands. Considering these findings, institutes of education should be a good starting point to promote the awareness of the psychosis-risk state.

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1. Introduction

The concept of health-related quality of life (HRQoL) plays an increasingly important role as an outcome measure in patients with schizophrenia (Bobes et al., 2007; Saarni et al., 2010; Dey et al., 2012) and individuals at risk for psychosis (Bechdolf et al., 2005; Svirskis et al., 2007; Granö et al., 2014). However, there is no consensus about the definition of the HRQoL concept and the instruments vary in their contents and scales. In the present article, we follow the definition of HRQOL as "a multidimensional construct covering physical, emotional, mental, social and behavioral components of well-being and functioning as perceived by patients and/or other individuals" (Ravens-Sieberer et al., 2007).

With regard to schizophrenia research, most HRQoL studies focus on first episode psychosis (Malla and Payne, 2005), early psychosis (Theodore et al., 2011a), first-degree relatives of patients with schizophrenia (Svirskis et al., 2007) and adult samples with ultra-high risk (UHR) for psychosis (Bechdolf et al., 2005). Granö et al. (2014) were the first to investigate help-seeking adolescents with UHR and found decreased HRQoL compared to other help seekers. Following Yung et al. (1996), the UHR criteria requires the presence of either attenuated positive symptoms (APS), brief limited intermittent

psychotic symptoms (BLIPS) or the presence of a biological risk factor together with a reduction of psychological functioning within the last year. Therefore, the structured interview of prodromal symptoms (SIPS) (McGlashan et al., 2001) has been reported to have a predictive validity for UHR status between 10% and 18% within one year (Yung et al., 2008; Ruhrmann et al., 2010).

Even so, the mentioned studies were conducted mainly on adults and include almost exclusively clinical control groups. In order to (1) replicate the findings of previous studies, (2) extend the results to a non-help-seeking sample of adolescents in the early stages of UHR, (3) limit the prediction to a highly diagnostic age range and (4) expand the generalizability by a comparison to healthy controls, we conducted a multiphase assessment of psychotic symptomatology and HRQoL among school-going adolescents aged 14–18 years. Therefore, we hypothesized UHR subjects to exhibit poorer HRQoL than healthy controls measured with the KIDSCREEN-27 (Ravens-Sieberer et al., 2007), one of the few instruments which measures quality of life related to health for children and adolescents and is well validated amongst 13 European countries.

2. Methods

2.1. Participants and recruitment

The sample consisted of 57 participants between 14 and 18 years of age, with 27 subjects belonging to the UHR group and 30

Table 1

Used indexes of the Wechsler Intelligence Scale for Children-fourth edition (WISC-IV), as well as dimensions and example questions of the Structured Interview for Psychosis-Risk Syndromes (SIPS) and the KIDSCREEN-27.

Test	Index scores
WISC-IV	
	– Verbal comprehension index (subtests similarities, information)
	– Perceptual reasoning index (subtests block design, matrix reasoning)
Questionnaire	**Dimensions**
SIPS	
	– Unusual thought content/delusional ideas (e.g. "Have you ever had difficulties to distinguish between reality and fiction?")
	– Suspiciousness/persecutory ideas (e.g. "Have you repeatedly believed that others think badly of you?")
	– Grandiosity (e.g. "Have you ever thought that you are particularly gifted?")
	– Perceptual abnormalities/hallucinations (e.g. "Have you ever heard something nobody else could hear?")
	– Disorganized communication (e.g. "Have others ever had problems to follow your reasoning?")
KIDSCREEN-27 (translated by the authors)	
	– Physical well-being (e.g. "Have you felt well last week?")
	– Psychological well-being (e.g. "Have you been happy with your life last week?")
	– Autonomy and parents (e.g. "Have your parents treated you fairly last week?")
	– Peers and social support (e.g. "Have you had a good time with your friends last week?")
	– School environment (e.g. "Have you had difficulties in paying attention in school last week?")

subjects being part of the healthy control group.

The adolescents with UHR were recruited in a three-phase screening. In the first phase, adolescents from Heidelberg and Mannheim, Germany ($n=11,960$) were contacted by mail. They were asked to fill in an online questionnaire that dealt with deviations in cognition, perception and concentration. Seven of the 20 questions of this online questionnaire examined psychotic-like symptoms (PLE). The other thirteen questions were distractor questions. In the second phase, all subjects that exhibited PLE ($n=818$) were contacted by phone by trained graduate-level psychologists to participate in a structured interview for prodromal symptoms. If the criteria for a UHR were fulfilled, subjects ($n=43$) were invited to the third phase. In total, 27 UHR subjects agreed to participate in a clinical, psychometric and cognitive assessment in the Department of Child and Adolescent Psychiatry, Heidelberg, Germany.

Healthy subjects ($n=30$) were recruited by a random selection of all subjects participating in the online questionnaire, regardless of their scoring on PLE. PLE are a common phenomenon in the general population and are experienced by 7.5% of adolescents between 13 and 18 years of age (Kelleher et al., 2012a). The exclusion of adolescents exhibiting PLE in the healthy control group would thus lead to a decreased representativeness regarding the general population. With all subjects of the healthy control group, a structured interview for prodromal symptoms was conducted to assess the extent of PLE and to exclude those who fulfilled the UHR criteria. Furthermore, subjects of the healthy control group were excluded if they had any life-time diagnosis of a psychiatric disorder. Psychiatric diagnoses were assessed using the M.I.N.I. Kid (Sheehan et al., 2010).

The study was approved by the Ethics committee of the Faculty of Medicine, University of Heidelberg. Both participants and their legal guardians gave written informed consent after the study and its procedure were explained to them.

2.2. Measures

The *Adolescent Psychotic Symptom Screener (APSS)* (Kelleher et al., 2011) was translated into German and used in the online questionnaire because of its high degree of accuracy screening the general adolescent population for PLE (Kelleher et al., 2012b).

The section of positive symptoms of the *Structured Interview for Psychosis-Risk Syndromes (SIPS), version 5.0* (McGlashan et al.,

2010) was used to assess UHR criteria following Yung et al. (1996). Thereby, the presence of a biological risk factor together with a reduction of psychological functioning within the last year was not examined in our study due to inadequate retrospective accessibility.

Four subtests of the *Wechsler Intelligence Scale for Children – Fourth Edition (WISC-IV)* (Wechsler, 2003) were administered to generate a shortened version of the global ability index (GAI) (Raiford et al., 2005). Originally based on three verbal comprehension and three perceptual reasoning subtests, in the present study only two subtests in each case were assessed due to economic reasons. The third subtest of verbal comprehension and perceptual reasoning was estimated by the other two available subtests.

The *KIDSCREEN-27* (Ravens-Sieberer et al., 2007) is a well-validated HRQoL self-measure usable for children and adolescents between 8 and 18 years of age. It is capable to distinguish between the five independent factors psychological well-being, physiological well-being, autonomy and parents, peers and social support and school environment.

A more detailed overview of the used WISC-IV indexes as well as dimensions and example questions of the SIPS and the KIDSCREEN-27 are given in Table 1.

2.3. Statistical analyses

Statistical analyses were conducted using SPSS Statistics version 22 for Windows (IBM Corp, 2013). Means, chi-squares and standard deviations were calculated for demographic variables. Between-group differences were calculated with independent sample t-tests for the HRQoL scales. Logistic regression analysis was used to assess the relationship between being at risk for psychosis and HRQoL scales. This analysis included those variables of the HRQoL scale that have statistical tendency to differ regarding at risk status for psychosis in an independent sample t-test at a significance level <0.05.

3. Results

Groups differed in age ($t(55)=-2.39$, $p=0.021$) and intelligence ($t(55)=-5.07$, $p<0.001$) in terms of a younger age and poorer intelligence within UHR subjects. There were no differences