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Perspectives in Early Intervention

Intervention to improve level of overall functioning and mental condition of adolescents at high risk of developing first-episode psychosis in Finland

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Abstract

Aim: Being at high risk of developing psychosis has been suggested to be a result of a combination of acute life stressors and trait-like vulnerability to psychosis. Reducing levels of stress could support overall functioning and mental condition in those at risk.

Methods: The Jorvi Early Psychosis Recognition and Intervention (JERI) project at Helsinki University Central Hospital, Jorvi Hospital, Finland, is an early intervention team for adolescents at risk of developing first-episode psychosis. The project is based on the idea of multiprofessional, community, home, family and network-oriented, stress-reducing, overall functioning-supporting, low-threshold care. The JERI team meets multiprofessionally with adolescents in their natural surroundings, for example, at school or at home, together with their parents, network and community co-worker, who has originally contacted the JERI team because of unclear mental health problems. Subjects were assessed with the PROD-prodromal screen to identify those at risk of developing first-episode psychosis.

Results: Statistically significant difference between baseline and follow-up measures was found in at risk subjects ($n = 28$) in scales of overall functioning ($P = 0.000$), depression ($P = 0.001$), anxiety ($P = 0.001$), quality of life (QOL) and pre-psychotic symptoms.

Conclusions: JERI-type intervention may improve level of overall functioning and support mental condition in adolescents at risk of developing first-episode psychosis, even though further study with larger numbers of subjects, with a control group and with a longer follow-up time, is needed.

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INTRODUCTION

According to the vulnerability–stress model of psychosis, vulnerability to psychosis has been seen as a trait and psychosis as a state, which has been assumed to be a result of a combination of acute life stressors and vulnerability to psychosis.[1] Reported interventions for people at risk of developing first-episode psychosis are few[2] and commonly based on cognitive behavioural therapy[3] and antipsychotic medication.[4] Family interventions have shown to be a proxy treatment in first-episode psychotic patients,[5] and in Finland, multiprofessional, home and family-oriented, low-threshold care has been shown to be effective in first-episode psychotic patients.[6] Hence, a multiprofessional stress-reduction strategy could be useful in at-risk subjects due to poor functioning ability[7] and vulnerable to stress.[8] Multiprofessional, need-adapted care allows specialized professionals to manage concrete problems at a practical level, which may further reduce stress and support overall functioning. In sum,

reducing level of stress by multiprofessional, home- and family-oriented care could also help adolescents at risk of developing first-episode psychosis.

The Jorvi Early Psychosis Recognition and Intervention (JERI) project at Helsinki University Central Hospital (HUCH), Jorvi Hospital, Finland, was founded as an early intervention team for adolescents at risk of developing first-episode psychosis. The project is based on Alanen's need-adapted approach[9] and on the idea of multiprofessional, community, home and family-oriented, stress-reducing, and supporting overall functioning, all within low-threshold care environments without the stigma of psychiatric care. This kind of approach is non-labelling and extremely suitable for those who appear not to be at risk for psychosis, in a similar way that Morrison suggests cognitive behavioural therapy to be for at-risk clients.[10] The JERI team works together with community co-workers, such as social workers, teachers, nurses and general practitioners, and is itself a multiprofessional team of three psychiatric nurses, an occupational therapist, a psychologist and a supervising psychiatrist. The JERI team meets with adolescents between the ages of 12–20 years in their natural surroundings, for example, at school or at home, together with their parents and community co-worker, or referrer to the JERI team. Because of unclear nature of the development and maintenance of mental health problems, including other professionals can be invaluable. For example, if an adolescent at risk has been bullied at school, including a social worker who has special methods of decreasing bullying (in school) into the multiprofessional care team may reduce the stress level in the at-risk adolescent. The team has three main tasks: first, to identify the possible risk of developing psychosis; second, in such cases, meet frequently with the client and family together with the community co-worker to find ways of reducing stress and supporting the client in overall functions at school or at work; and third, if some other psychiatric disease or untreated psychosis comes up, to guide the client and their family towards the appropriate psychiatric care setting. The team continues working with the adolescent, family and community co-workers for as long as it takes to feel secure on their own or the adolescent is guided into psychiatric or other care as negotiated with the adolescent and their family. The aim of the team and intervention project is to recognize potential risk cases and reduce the stress level by family and network interventions. The referral process to the JERI team was based on the community co-worker's selection of either ordinary mental health service or the JERI team for the adolescent, depending on the type of problems the adolescent had. Co-workers on the catchment area were given regular seminars, education and flyers about early psychosis recognition and about the JERI team. The catchment area was the Jorvi Hospital district with 282 000 citizens, including the towns of Espoo, Kauniainen and Kirkkonummi.

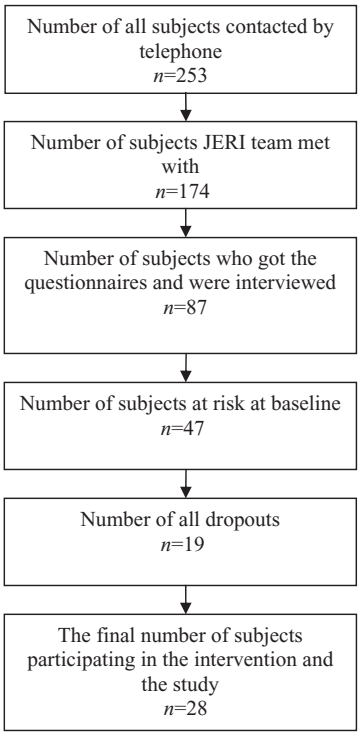
As previous evidence suggests that pre-psychotic symptoms are associated with decreased overall functioning and QOL,[7] the hypothesis for the present study is that the JERI intervention may reduce pre-psychotic symptoms and increase overall functioning and QOL and support mental condition in adolescents at risk of developing first-episode psychosis.

METHODS

Subjects were assessed with the PROD screen to identify those at high risk of developing first-episode psychosis.[11] The PROD screening tool has 21 items, 12 of them focusing specifically on psychotic experiences. The PROD is based on the questions from the SIPS (Structural Interview for Prodromal Symptoms),[12] Interview for the Retrospective Assessment of the Onset of Schizophrenia[13] and Bonn Scale for the Assessment of Basic Symptoms[14] screens. Examples of specific risk items are difficulties thinking clearly or concentrating, interfering thoughts or thoughts interrupted; difficulties in understanding written text or speech heard; and disorders in connection with hearing odd sounds or voices without obvious source.[11] The PROD screen has been standardized by evaluating results with the SIPS screen, and PROD reached 75% specificity with a cut-off point of two or more; this was the threshold used in the present study.[11] The SIPS interview has been reported to have a high predictive validity, as up to 54% of SIPS positive cases had developed psychosis at 12 months follow-up,[15] even though lower incident rates have also been presented.[16–18] The present study was accepted by the ethics committee of Helsinki University Central Hospital, Jorvi Hospital; voluntary participation in the study was emphasized.

All scales were completed at the first and last contact, coinciding with the beginning and end of the intervention. The data (questionnaires and interviews) was collected by workers in the team between 1 January 2007 and 31 May 2008. Global Assessment of Functioning (GAF)[19] was used to measure overall functioning. Other measurements included background information, questionnaires in scales of QOL (16D, range 0–64, 0 = no

FIGURE 1. Process description of subjects who were selected into the study.



symptoms),[20] depression (R-BDI-13, range 0–39, 0 = no symptoms),[21,22] anxiety (range 0–3, 0 = no symptoms, additional single item in R-BDI-13)[21,22] and pre-psychotic symptoms (PROD questionnaire).[11] Paired samples *t*-test was performed in those who were PROD-positive at baseline between the first and the last meeting.

ASSESSMENTS

From a total of 253 telephone contacts, project workers met with 174 subjects (Fig. 1), the rest were telephone consultations. The adolescents who demonstrated a potential risk of developing psychosis administered the questionnaire and interviewed. Eleven subjects, of all contacted adolescents, were classified as having untreated psychosis. Of a total of 87 subjects who completed the questionnaire at baseline, 47 PROD-positive adolescents were identified. Of all risk subjects, those who only completed questionnaires at baseline did not differ in overall functioning ($P = 0.084$), QOL ($P = 0.602$), depression ($P = 0.882$) or anxiety ($P = 0.672$) scores from those who completed both questionnaires, but they had significantly more pre-psychotic ($P = 0.001$) symptoms at baseline. Three risk subjects were classified as having untreated psychosis at baseline and, additionally, two subjects developed first-episode psychosis during the intervention. Fourteen subjects did not complete the follow-up questionnaire: six of them dropped out, four were forwarded further to neurological or social care, and four were sent forwards to psychiatric care because of severe depression. The rest of the subjects ($n = 28$) who met PROD-positive criteria had no other ongoing therapy, completed baseline and follow-up questionnaires, did not receive any antipsychotic medication and were not classified as having first-episode psychosis.

TABLE 1. Paired samples *t*-test between first and last contact in scales of GAF, BDI-13, quality of life, anxiety and PROD questionnaires in subjects at high risk of developing psychosis

	Statistics			Paired differences			
	n	Mean	SD	Mean	SD	*t*	*P*
GAF I	28	51.9	6.4	–13.4	9.0	–7.8	0.000
GAF II	28	65.3	6.5				
QOL I	28	10.9	6.2	4.8	6.0	4.3	0.000
QOL II	28	6.1	4.0				
PROD I	28	3.6	1.1	1.6	1.9	4.5	0.000
PROD II	28	2.0	2.1				
BDI I	28	9.0	7.1	5.3	7.2	3.8	0.001
BDI II	28	3.8	5.2				
ANX I	28	1.1	0.8	0.7	0.9	3.8	0.001
ANX II	28	0.4	0.6				

Number after the name of the scale refers to the time of measurement. I, first measurement; II, last measurement; GAF, Global Assessment of Functioning; QOL, Quality of Life; PROD, pre-psychotic symptoms; BDI, depression; ANX, anxiety.

RESULTS

Mean age was 14.5 years (range 12–18 years), 18 (64%) girls and 10 (36%) boys. The mean for the number of all meetings per case was 10 times (standard deviation (SD) four times) and mean follow-up time was 214 days (SD 131 days). Three subjects had medication for depression. Results of paired samples *t*-tests are shown in Table 1. At the group level, mean scores had statistically significant difference between first and last contact in every scale. Mean scores for overall functioning (GAF scores) were 51.9 points in the beginning of the intervention and 65.3 points at the end of the intervention, showing a difference at a significant level ($t = –7.8$). The difference was significant at the group level in QOL, as mean scores decreased from 10.9 to 6.1 points ($t = 4.3$). In the depression scale, mean scores decreased at the group level from 9.0 to 3.8 points ($t = 3.8$, $P = 0.001$). A difference was also found in pre-psychotic symptoms ($t = 4.5$), which decreased from baseline to follow-up. Additionally, anxiety scores also decreased significantly ($t = 3.8$, $P = 0.001$).

DISCUSSION

The aim of study was to test if a multiprofessional, family-oriented and stress-reducing early intervention team could improve functioning and mental health in subjects at risk developing psychosis. During the intervention, mean scores rose statistically significantly on overall functioning and scores on QOL, depression, anxiety and pre-psychotic symptoms decreased statistically significantly, showing an improvement in overall functioning and mental condition in adolescents at risk of developing first-episode psychosis. Adolescents did not receive other therapy or any antipsychotic medication and they were not experiencing a first-episode of psychosis.

The main result was significant improvement in overall functioning, both at the statistical and at the practical level. About 13-point changes in overall functioning, measured by GAF scores, have a practical effect on ability to work or attend school. A recent study has shown that pre-psychotic symptoms are positively associated with decreased GAF and QOL scores,[7] and the present study is in accordance with those results and, additionally, shows an important result where this tendency may be altered by a psychological intervention. The result that depression scores, measured by the R-BDI-13 scale, decreased at the group level from 9 to 3.8 points indicates a significant improvement in mood. In the R-BDI-13 questionnaire, 8 points refers to medium-level depression and less than 4 points is classified to be under mild-depression criteria.[21] Anxiety scores derived from an additional anxiety-measuring item in the R-BDI-13 scale showed a statistically significantly reduction during the intervention. Differences in the QOL scale between baseline and follow-up were statistically significant, as decreasing, even though validity studies for present clinically defined sample is not available.

As the PROD screen has 75% specificity of being in 54% risk of developing first-episode psychosis in the next 12 months, according to the SIPS method, several subjects should have made transition to psychosis during the follow-up of the present study. With other screening methods, a 12-month transition rate to first-episode psychosis has varied between 41% and 17%; in few controlled psychological intervention studies, 12-month transition rates varied between 20% and 5% in experiment groups and between 36% and 15% in control groups.[2] McGorry *et al.* found a difference in transition rates between experiment and control groups (10% vs. 36%) in a 6-month follow-up study.[4] In the present study, 2 of 44 subjects turned to first-episode psychosis during the mean 7-month intervention, suggesting a transition rate of about 5%. However, the total number of subjects in our sample is too small to make any further conclusions regarding the transition rate. Low transition rate may be the result of items used in the PROD screen, as several risk items in the screen are based on basic symptoms. Basic symptoms are earlier risk symptoms for psychosis than symptoms measured with the SIPS scale, but in the long run basic symptoms predict a new psychosis with high validity and reliability.[2] Additionally, risk status was based on interview and clinical judgement of two team workers, improving the validity and reliability of our inclusion criteria and it is possible that some of the dropouts may have developed psychosis. However, the transition rate in the present study seems to be in accordance with other psychological interventions for people at risk of developing first-episode psychosis. Of all cases who were at risk of developing first-episode psychosis at baseline, dropouts had significantly more pre-psychotic symptoms, suggesting that those who had complete intervention were perhaps presenting another sub-group with fewer pre-psychotic symptoms, and further suggesting the possibility that they were not as close to developing psychosis as were the dropouts. Furthermore, the gender balance was similar to what Salokangas *et al.* found in their study (67% women, 33% men), which was a part of the international European Prediction of Psychosis Study study.[23] Salokangas *et al.* also used the PROD screen to identify subjects vulnerable to psychosis, even though the final number of subjects at risk was screened by the SIPS interview.

As the vulnerability–stress model of psychosis states, vulnerability to psychosis has been seen as a trait and psychosis as a state, which has been assumed to be a result of the combination of acute life stressors and vulnerability to psychosis.[1] Additionally, stress has also been shown to have an impact on developing psychosis. [8] Working together with community co-workers and a primary network of adolescents may have more concrete and permanent consequences on reducing stressful elements in adolescents' lives. Because psychosis may have different effects on cognitive functions,[24] and some cognitive deficits are already present within the at risk phase of psychosis,[25] it may be possible that an intervention model that tries to support adolescents in their daily life and daily problems at a very concrete level may support those adolescents better than traditional forms of psychotherapy. For example, JERI-type care can reduce the adolescent's stress level by including family therapy in the care when parents are divorcing, or by helping the family

to support the adolescent in waking up early and going to school. Furthermore, even though cognitive therapy, which has been shown to be useful in risk cases of developing psychosis,[3] was not used in the present study, the presented intervention may have, in practice, similar components to cognitive therapy in discussing problems and solving them on a very practical level. For example, an adolescent may have difficulties going to school so a member of the team would work to understand the problems and then, together with the adolescent, work out how to use the bus to make it easier to go to school.

One major limitation for the interpretation of the results of the present study is the naturalistic study design with all assessments and interventions carried out by team members. Without a control group presented, positive outcomes may be interpreted only as being due to any sustained contact with a mental health service, not specifically to the JERI intervention. Furthermore, the intervention began if the subject was showing signs of being at high risk of developing psychosis, and finished when the subject was feeling well or was guided forward to social, neurological or psychiatric care because of social or other mental problems. Hence, it was not possible to compare different cases because of different intervention times or meeting times. Second, a risk of false-positive cases remains relatively high and this might have an effect on the results in a small sample such as this, if the number of real risk cases were lower than presented.

In sum, a multiprofessional, community, family-, network- and home-oriented, stress-reducing intervention may improve level of overall functioning and mental condition in adolescents at risk of developing first-episode psychosis, even though the present results are preliminary and further study with a larger number of subjects, with a control group and with a longer follow-up time, is needed.

REFERENCES

1. Zubin J, Spring G. Vulnerability – a new view of schizophrenia. *J Abnorm Psychol* 1977; **82**: 103–26.
2. Bechdolf A, Phillips LJ, Francey SM *et al.* Recent approaches to psychological interventions for people at risk of psychosis. *Eur Arch Psychiatry Clin Neurosci* 2006; **256**: 159–73.
3. Morrison AP, French P, Walford L *et al.* Cognitive therapy for the prevention of psychosis in people at ultra high risk. *Br J Psychiatry* 2004; **185**: 291–7.
4. McGorry PD, Yung AR, Phillips LJ *et al.* Can first episode psychosis be delayed or prevented? Randomized controlled trial of interventions during the prepsychotic phase of schizophrenia and related psychosis. *Arch Gen Psychiatry* 2002; **59**: 921–8.
5. Penn DL, Waldheter EJ, Perkins DO, Mueser KT, Lieberman JA. Psychosocial treatment for first episode psychosis: a research update. *Am J Psychiatry* 2005; **162**: 2220–32.
6. Seikkula J, Olson ME. The open dialogue approach to acute psychosis: its poetics and micropolitics. *Fam Process* 2003; **42**: 403–18.
7. Svirskis T, Korkeila J, Heinimaa M *et al.* Quality of life and functioning ability in subjects vulnerable to psychosis. *Compr Psychiatry* 2007; **48**: 155–60.
8. Phillips LJ, Francey SM, Edwards J, McMurray N. Stress and psychosis: towards the development of new models of investigation. *Clin Psychol Rev* 2007; **27**: 307–17.
9. Alanen YO, Lehtinen K, Räkköläinen V, Aaltonen J. Need-adapted treatment of new schizophrenic patients: experiences and results of the Turku Project. *Acta Psychiatr Scand* 1991; **83**: 363–72.
10. Morrison AP, French P, Parker S *et al.* Follow-up of a randomized controlled trial of cognitive therapy for the prevention of psychosis in people at ultrahigh risk. *Schizophr Bull* 2007; **33**: 682–7.
11. Heinimaa M, Salokangas RKR, Ristkari M *et al.* PROD-screen, a screen for prodromal symptoms of psychosis. *Int J Methods Psychiatr Res* 2003; **12**: 92–104.
12. McGlashan T. *Structured Interview for Prodromal Symptoms. SIPS, Manual*. New Haven, CT: Yale School of Medicine, 1998.
13. Häfner H, Riecher-Rössler A, Färkenheuer B, Maurer K, Meissner S, Löffler W. *Interview for the Retrospective Assessment of the Onset of Schizophrenia (IRAOS)*. Patton G, Trans. Manual. Mannheim: Central Institute of Mental Health, 1992.
14. Gross G, Huber G, Klosterkötter J, Linz M. *Bonner Scala Fûr Die Beurteilung Von Basissymptomen (BSABS)*. Berlin: Springer, 1987.
15. Miller TJ, McGlashan TH, Rosen JL *et al.* Prospective diagnosis of the initial prodrome for schizophrenia based on the structural interview for prodromal symptoms: preliminary evidence of interrater reliability and predictive validity. *Am J Psychiatry* 2002; **59**: 921–8.
16. Lemos S, Vallina O, Fernandez P *et al.* Predictive validity of the scale of prodromal symproms (SOPS). *Actas Esp Psiquiatr* 2006; **34**: 216–23.
17. Yung AR, Phillips LJ, Yuen HP *et al.* Psychosis prediction: 12-month follow up of a high-risk ('prodromal') group. *Schizophr Res* 2003; **60**: 21–32.
18. McGorry PD, Yung AR, Phillips L. Ethics and early intervention in psychosis: keeping up the pace and staying in step. *Schizophr Res* 2001; **51**: 17–29.
19. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*, 3rd edn, rev. Washington, DC: American Psychiatric Association, 1987.
20. Apajasalo M, Sintonen H, Holmberg C *et al.* Quality of life in early adolescence: a sixteen dimensional health related measure (16D). *Qual Life Res* 1996; **5**: 205–11.
21. Kaltiala-Heino R, Rimpelä M, Rantanen P, Laippala P. Finnish modification of the 13-item beck depression inventory in screening an adolescent population for depressiveness and positive mood. *Nord J Psychiatry* 1999; **53**: 451–7.
22. Beck AT, Beck RW. Screening depressed patients in family practice. A rapid technic. *Postgrad Med* 1972; **52**: 81–5.
23. Salokangas RKR, Heinimaa M, Svirskis T *et al.* Patient vulnerable to psychosis (in Finnish). *Studies in Social Security and Health* Vol. 91. Helsinki: The Social Insurance Institution, Finland, 2007; 62.
24. Liu SK, Hsieh MH, Huang TJ *et al.* Patterns and clinical correlates of neuropsychologic deficits in patients with schizophrenia. *J Formos Med Assoc* 2006; **105**: 978–91.
25. Pukrop R, Ruhrman S, Schultze-Lutter F, Bechdolf A, Brockhaus-Dumke A, Klosterkötter J. Neurocognitive indicators for a conversion to psychosis: comparison of patients in a potentially initial prodromal state who did or did not convert to a psychosis. *Schizophr Res* 2007; **92**: 116–25.