Loneliness and related factors among people with schizophrenia in Japan: a cross-sectional study

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Accessible summary

What is known about the subject?
• Loneliness among people diagnosed with schizophrenia is a serious problem. Recent studies have focused on the loneliness; however, no study has examined the relationships between loneliness and both individual and environmental factors comprehensively.

What this paper adds to existing knowledge?
• The main results indicated that the community-dwelling people diagnosed with schizophrenia in Japan as well as in other countries experienced higher levels of loneliness. Both individual and environmental factors were related to loneliness. Increasing the self-efficacy for community life and self-esteem of individual factors, and not being socially isolated and increasing community integration of environmental factors would improve their loneliness.

What are the implications for practice?
• Health practitioners, in particular, public health nurses in mental health care, should work to develop a partnership with people diagnosed with schizophrenia, their family members, friends and other community-dwelling people in order to decrease and prevent loneliness. For individuals diagnosed with schizophrenia, interventions by cooperating with community resources and using the technique of nurses to assist them with continuous community activity could be useful. For environmental interventions, population approach such as developing daily programmes which family members can participate in, and cooperating with educational institutions and community events could have a positive effects.

Abstract

Introduction: Loneliness among people diagnosed with schizophrenia living in communities can decrease quality of life and may contribute to suicide. Aim: The aim of this study was to examine the levels of loneliness among Japanese people diagnosed with schizophrenia and to identify individual and environmental factors related to their loneliness. Method: A cross-sectional survey was conducted with 264 people diagnosed with schizophrenia who use local activity support centres in urban areas. The self-administered questionnaires included questions on loneliness, demographic characteristics, individual factors including self-efficacy for community life and self-esteem, and environmental factors including social isolation, community integration and service use. Results: The study results indicated that people diagnosed with schizophrenia in Japan experience higher levels of loneliness, corroborating results from other countries. Multiple regression analysis showed that a lower level of self-efficacy for community life, self-esteem, community integration and social isolation predicted a higher level of loneliness, accounting for 55.3% of
variance. Implications for Practice: Public health nurses in mental health care in Japan can work with individuals diagnosed with schizophrenia and communities using the technique to assist them with continuous activity and cooperating with community resources and educational institutions in order to decrease and prevent loneliness.

Introduction

Schizophrenia is a severe mental illness characterized by psychotic symptoms, negative symptoms, impairments in social functioning, cognitive deficits and often relapse (Lehman et al. 2006). Epidemiological data indicate that approximately 1% of the population develop schizophrenia during their lifetime (Lehman et al. 2006).

In 2011, 713 000 people diagnosed with schizophrenia were treated in Japan, with 174 000 admitted to psychiatric hospitals. They accounted for 57.5% of all inpatients with mental disorders, and had an average of 561.1 days spent in hospital in 2011 (Ministry of Health, Labour and Welfare 2011). Psychiatric care in Japan previously promoted hospitalization; however, social and economic pressures drove changes to mental health service provision through decentralization and a decrease in the number of beds and days spent in psychiatric hospitals (World Health Organization 2004). ‘Toward further reform of mental health care and welfare’ (Ministry of Health, Labour and Welfare 2008) reported that the Japanese government decided to decrease the target number of inpatients with schizophrenia, citing a shift in focus from the inpatient treatment of disabled people to working with these people in order to provide support and assist their integration into community life. Therefore, it is estimated that the number of people diagnosed with schizophrenia living in communities has been increasing, and will continue to do so. The role of public health nurses in Japan, who are expected to have specialized knowledge and skills to take care of people diagnosed with severe mental illness (SMI) (Yamashita et al. 2005), thus becomes more important in Japanese mental health nursing.

The goal for those diagnosed with schizophrenia is to improve their quality of life (QOL) (Lehman et al. 2006), which should be accomplished through engagement with community life. However, previous studies have shown that QOL in such individuals is lower compared to that of the general population and of people diagnosed with other psychiatric and physical illnesses (Bobes et al. 2007). Loneliness is one of the factors that lead to decreased QOL in people diagnosed with schizophrenia (Weiner et al. 2010, Roe et al. 2011). Previous studies have shown that members of this group describe problems with loneliness (Weiner et al. 2010, Roe et al. 2011).

Loneliness is the unpleasant experience that occurs when a person’s network of social relations is either quantitatively or qualitatively deficient in some important ways (Peplau & Perlman 1982). Loneliness and social isolation are not synonymous (Peplau & Perlman 1982, Perese & Wolf 2005), as the latter is the absence of a social network that may or may not be distressing. Loneliness not only decreases QOL (Weiner et al. 2010, Roe et al. 2011) but is also known to be a possible contributing factor to suicide among people diagnosed with schizophrenia (Pinikahana et al. 2003, Skodlar et al. 2008). Suicide, or suicidal behaviour, is known to be one of the major complications of schizophrenia. Thus, recent studies have focused on subjective experiences of loneliness (Skodlar & Parnas 2010).

According to previous studies, some individual and environmental factors increase the incidence of loneliness among people diagnosed with schizophrenia living in the community. These individual factors include psychotic symptoms (Angell & Test 2002, Roe et al. 2011) and social participation, while the environmental factors include living arrangements and social support (Schwarts & Gornemann 2009). However, these studies have several limitations when applied to a Japanese context. Firstly, their subjects are not representative of people diagnosed with schizophrenia living in Japanese communities, as the studies were conducted abroad, and the participants were young adults (Stein et al. 2013) living in institutions such as group homes or supported apartments (Schwarts & Gornemann 2009, Roe et al. 2011) or having had taken part in specific medical programmes (Angell & Test 2002). Secondly, among the studies on loneliness among people diagnosed with schizophrenia, most used a multidimensional measure (Weiner et al. 2010, Roe et al. 2011, 2012) or unreliable and invalid scales for loneliness (Cohen et al. 1997, Borge et al. 1999, Angell & Test 2002). In cases where loneliness is conceptualized as a multidimensional construct or qualitative studies are conducted, it is difficult to discuss the relationships between loneliness and other factors. Thirdly, conceptual frameworks that include comprehensive individual and environmental factors have yet to be studied.
Some people diagnosed with schizophrenia living in the community might have problems related to daily living caused by individual and environmental factors. In terms of individual factors, negative symptoms and cognitive impairments are also common features in the stable phase (Lehman et al. 2006). Some people diagnosed with schizophrenia also have poor life skills for community living, which can cause failures in activities of daily life and decrease self-efficacy. In addition, they might also feel a sense of ‘being different’ from other community members, which is often linked to low self-esteem (Skodlar et al. 2008). In terms of environmental factors, some people diagnosed with schizophrenia have small social networks and do not adequately use social support and services (Murashima et al. 2002, Roe et al. 2011). Additionally, stigma caused by a long history of exclusion remains deeply rooted (Chan & Mak 2014). These problems lead to loneliness in community life. Understanding the individual and environmental factors that relate to loneliness among people diagnosed with schizophrenia living in the community is important, as decreasing loneliness may improve an individual’s QOL, as well as reduce and potentially prevent suicide.

Aim

The aim of this study was to examine the loneliness among people diagnosed with schizophrenia living in Japanese communities, and to identify individual and environmental factors related to loneliness. The results of this study can help public health nurses in mental health care create interventions to improve individuals’ QOL and contribute to minimizing the effect of one factor that might be associated with an increased risk of suicide.

Methods

Design

This study was a cross-sectional study with self-administered questionnaires that required approximately 15 min to complete. Participants were recruited from the users of local activity support centres in two urban areas of Japan. This is because people diagnosed with schizophrenia living in the community and those diagnosed with schizophrenia post-discharge from psychiatric hospitals are encouraged to use local activity support centres in order to reintegrate into the community (Takahashi & Oshima 2001). One of the criteria for registration to the local activity support centre was a diagnosis of schizophrenia identified using International Classification of Diseases (ICD)-10 under the General Support for Persons with Disabilities Act in Japan. Prior to sending the questionnaire, we identified the sample by acquiring information about the registrants from the administrators at each centre. We explained the aim, methods, benefits and risks of the study to the administrators at each centre, and then asked them how many people diagnosed with schizophrenia used the centres in a written document. The anonymity of the users was maintained through the whole process. The 560 questionnaires with informed consent letters were sent to each centre via mail. Each participant was asked to complete a self-administered, anonymous questionnaire voluntarily from August 1 to October 31, 2014.

Study participants

The participants were community-dwelling people diagnosed with schizophrenia residing in urban areas of Japan. The criteria for participants included: (1) diagnosed with schizophrenia according to the ICD-10; (2) living in the community; (3) aged 18 to 64 years (people over 64 years of age were excluded because they cannot register at local activity support centres under the General Support for Persons with Disabilities Act in Japan.); and (4) discharged for at least one and a half years from a psychiatric hospital [the stable phase of schizophrenia corresponds to the 18 months following the acute episode and stabilization phase (Lehman et al. 2006)]. The information of (3) and (4) were obtained from the self-administered questionnaire in this study.

Measures

University of California, Los Angeles Loneliness Scale version 3

The dependent variable was loneliness. Loneliness was determined using the Japanese version of the University of California, Los Angeles Loneliness Scale version 3 (UCLA LS) (Masuda et al. 2012). The UCLA LS consists of 20 items, and includes questions such as ‘How often do you feel left out?’ and ‘How often do you feel a lack of companionship?’ The responses were categorized and coded for scoring as ‘Never: 1’, ‘Rarely: 2’, ‘Sometimes: 3’, and ‘Always: 4’. The total UCLA LS score can range from 20 to 80, with higher scores indicating higher degrees of loneliness. All 20 items are highly intercorrelated in the Japanese version (Cronbach’s alpha = 0.92), and the validity of the scale has been established.

Demographic characteristics

Demographic characteristics of the participants in this study included basic characteristics such as age, sex, living status, household membership, marital status, educational...
status, budget, employment status, age at first diagnosis with schizophrenia, history of psychiatric hospitalization, cumulative years of psychiatric hospitalization, outpatient treatment for schizophrenia and psychiatric comorbidities.

Self-efficacy for community life
Self-efficacy for community life was measured using the Self-efficacy for Community Life scale (SECL) (Okawa et al. 2001), which consists of 18 items classified into five domains: daily living, behaviour in relation to treatment, behaviour in relation to symptoms, social life and interpersonal relationships. Each item is examined on an 11-point Likert scale ranging from 0 to 10. The total score ranges from 0 to 180, with higher scores indicating greater self-efficacy. The scale’s reliability has been established, with a Cronbach’s alpha of 0.90, and its validity was tested using the General Self-Efficacy Scale, Positive and Negative Syndrome Scale, and Global Assessment Scale.

Rosenberg self-esteem scale
Self-esteem was measured using the Japanese version of the Rosenberg Self-Esteem Scale (RSE) (Yamamoto et al. 2012), which consists of 10 items. The RSE is the most widely used measure of self-esteem, and its psychometric validity has been confirmed in many different population samples, including patients with schizophrenia (Torrey et al. 2000, Chou et al. 2014). Responses to the scale are assessed using a 5-point Likert scale. The total possible score ranges from 10 to 50, with higher scores representing greater self-esteem.

Lubben social network scale-abbreviated
Social isolation was measured using the Japanese version of the Lubben Social Network Scale-Abbreviated (LSNS-6) (Kurimoto et al. 2010). The scale consists of six items divided into two subscales: family network and friendship network. Responses to the scale are assessed using a 6-point scale. The total score ranges from 0 to 30, with high scores indicating a person with a good social network. A total score below 12 on the LSNS-6 identifies people at risk of social isolation. This cut-off point was justified by the original author based on theoretical and practical considerations (Kurimoto et al. 2010). The reliability and validity of LSNS-6 has been established.

Community integration measure
Community integration consists of four components, including assimilation, support, occupation and independent living (McColl et al. 2001). The original Community Integration Measure (CIM) was developed for people with traumatic brain injuries (McColl et al. 2001), though the contents are applicable to all people with a disability facing challenges related to integration into community life (Townley et al. 2013). Previous studies have shown that CIM can be applied to different cultures and ethnicities, and is adequate for psychiatric disorders including schizophrenia (Townley et al. 2013). Responses to the scale are assessed using a 5-point scale. The total score ranges from 10 to 50, with higher scores indicating higher degrees of community integration. This study used a Japanese version of the CIM, which the author and co-authors translated under a specialist’s instruction, after acquiring permission from Dr. McColl to translate the English version into Japanese. The face validity of the Japanese version was independently reviewed by five professional researchers in the fields of Public Health, Mental Health and Psychiatric Nursing, Health Science and Nursing, and Community Health Nursing, as well as seventeen people diagnosed with schizophrenia living in a community who met the criteria for this study. The Japanese version CIM’s Cronbach’s alpha was 0.87 in this study. Its validity displayed a significant relationship (P < 0.001) with the LSNS-6, which assesses social networks, the same concept examined in a previous study (McColl et al. 2001). The construct validity was also examined using confirmatory factor analysis (CFA) to assess the model fitness. CFA was performed and the following fit indices were found: goodness of fit index = 0.924, adjusted goodness of fit index = 0.881, comparative fit index = 0.925 and root mean square error of approximation = 0.085. The model fitted exactly for the study population. These results showed that the Japanese version of the CIM has one-dimensional factor structure as the original scale does.

Service use
Service use in this study included the use of day care, home help, visiting nurse for mental health care, rehabilitation service and continued employment support under the General Support for Persons with Disabilities Act (2013). Participants responded with ‘yes’, ‘no’, or multiple responses.

Statistical analysis
In this study, the sample size was estimated at 292, which was based on anticipation; the type one error rate was 0.05, power was 0.80 and effect size was 0.33. According to the findings from a previous study (Masuda et al. 2012), the calculation of the t-test showed that the 3.4-point change in the mean UCLA LS score (44.0 ± 9.1 vs. 40.6 ± 10.4) was statistically significant at the P < 0.05 level. Cohen’s d (effect size) was calculated at 0.33 using point changes and standard deviations (SDs). Descriptive statistics were used for calculating the mean, SDs, frequencies and percentages to describe demographic
characteristics. Univariate analysis by Pearson’s correlation was used to examine correlations between the dependent and independent variables. A multiple regression analysis was then conducted to identify factors related to loneliness among people diagnosed with schizophrenia, using all potentially significant predictors identified by the univariate analyses ($P < 0.05$) as independent variables via the forced entry method. In terms of multicollinearity, the correlations were less than 0.65 (Grove et al. 2012) among independent variables, and the variance inflation factor in this study ranged from 1.046 to 1.781. Therefore, evaluation of the multiple regression assumptions did not reveal any signs of multicollinearity. The multiple regression model contained selected independent variables and all statistical analyses. Skewness and kurtosis for all items were within acceptable limits (West et al. 1995). All analyses were conducted using IBM® SPSS for Windows version 22.0 and Amos version 20.0. Statistical significance was set at a two-sided level of 0.05.

**Ethics**

The Institutional Review Board of the Medical Department of the Yokohama City University approved this study on 24 July 2014. This study complied with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines (von Elm et al. 2008). Anonymous, self-administered questionnaires were mailed to the centres. Participants were informed that their participation was strictly voluntary in the study, and written informed consent was obtained before their participation. The questionnaires were anonymous so that no private information of any participants would be identifiable. All questionnaires were completed by the participants themselves, and were then returned directly to the researchers via mail.

**Results**

The 560 questionnaires were mailed out to the centres, the centres handed out the same number of questionnaires, and 402 were returned (71.8% response rate) (Figure 1). However, 138 of the 402 questionnaires were insufficiently completed, and were subsequently excluded from the analyses. Among the 138 excluded questionnaires, 111 gave no response regarding diagnosis, and the others gave no response for more than half of each scale; thus, they were not available for analysis. As a result, 264 questionnaires were completed and returned, of which 241 were completed for the variables of interest. The remaining 23 were not completed for the variables of interest (Figure 1).
were presented for analysis (effective response rate: 65.7%).

Table 1 shows the demographic characteristics of participants. The mean age of the participants was in the mid-forties and two-thirds were male. Three-quarters lived in their own or a rented house, and one-fifth lived in a group home. Three-sevenths lived with their parents, and one-quarter lived alone. Most participants were not married. Three-sevenths had graduated from high school. Three out of ten were working, and six out of ten indicated that they had insufficient or slightly insufficient budgets. One-half stated that their age at first diagnosis with schizophrenia was 20 to 29 years old, and a quarter stated that it was 10 to 19 years old. Five-sixths had experienced psychiatric hospitalization, and a fifth had one to five cumulative years of psychiatric hospitalization. Most participants had received outpatient treatment for schizophrenia and had no psychiatric comorbidities.

The mean score of the SECL was 127.3 (SD = 27.9).

The scores for each domain, including daily living, behaviour in relation to treatment, behaviour in relation to symptoms, social life and interpersonal relationships, were 33.8 (SD = 9.4), 30.7 (SD = 6.4), 28.2 (SD = 7.2), 22.6 (SD = 5.9) and 12.0 (SD = 5.1) respectively. The mean score of the RSE was 30.6 (SD = 7.8). The mean score of the LSNS-6 was 10.2 (SD = 5.8). The scores for the family network and friendship network domains were 5.0 (SD = 3.2) and 5.2 (SD = 3.8), respectively, with 152 participants (57.6%) rated as having social isolation based on the cut-off point. The mean score of the Japanese version of the CIM was 35.6 (SD = 7.7). The mean number of the total number of participants’ service use was 3.8 (SD = 1.1). The mean score of the UCLA LS was 45.6 (SD = 11.2).

Correlations between demographic characteristics, individual factors and environmental factors, and loneliness

Pearson’s correlation coefficients measured the linear relationship between each factor and loneliness among people diagnosed with schizophrenia. Demographic characteristics showing significant correlations with loneliness were
employment status \( r = -0.182, P = 0.003 \), budget \( r = 0.164, P = 0.007 \) and depression comorbidity \( r = 0.123, P = 0.045 \). Individual factors showing significant correlations with loneliness were the total score for the self-efficacy for community life \( r = -0.502, P < 0.001 \) and the scores for each subscale, as well as self-esteem \( r = -0.594, P < 0.001 \). Environmental factors showing significant correlations with loneliness were the total score for social network and the scores for each subscale, as well as social isolation \( r = -0.466, P < 0.001 \) and community integration \( r = -0.573, P < 0.001 \).

Factors related to loneliness
To identify factors associated with loneliness, self-efficacy for community life, self-esteem, social isolation and community integration were used as independent variables, and age, sex, employment status, budget and depression comorbidity were entered as controlled variables into a multiple regression analysis (Table 2). Community-dwelling people diagnosed with schizophrenia who reported lower self-efficacy \( \beta = -0.180, P = 0.001 \), lower self-esteem \( \beta = -0.378, P < 0.001 \), social isolation \( \beta = -0.255, P < 0.001 \) and lower community integration \( \beta = -0.227, P < 0.001 \) experienced a higher degree of loneliness. The adjusted \( R^2 \) in this analysis was 0.553.

Discussion

Representativeness of the study subjects
The participants in this study were representative of community-dwelling people diagnosed with schizophrenia in Japan. Firstly, in terms of demographic characteristics, such as age, sex and living status, the proportion of participants who had experienced a long period of hospitalization in this study was similar to the proportion of outpatients diagnosed with schizophrenia living in communities in Japan according to national statistics (Japan Ministry of Health, Labour and Welfare 2011). Secondly, in terms of the participants’ levels of loneliness, the UCLA LS scores in this study were similar to scores in previous studies abroad of people diagnosed with schizophrenia living in the community (Schwarts & Gornemann 2009, Stein et al. 2013), and were higher than scores in previous studies of the general population (Russell 1996, Sato et al. 2014). Thirdly, the response rate in this study was sufficient (72.0%), and an explanation for this may derive from the anonymity guaranteed by the study design and the easy-to-answer questionnaire.

What the study adds to existing research
This study has added to the existing research evidence that both individual factors including self-efficacy and self-esteem, and environmental factors including social isolation and community integration are related to loneliness among community-dwelling people diagnosed with schizophrenia. These new findings contribute to the understanding of loneliness and have practical implications for decreasing loneliness among community-dwelling people diagnosed with schizophrenia. Of these new findings, self-efficacy is in conflict with Schwart & Gornemann’s report that self-efficacy does not predict loneliness. Our results indicated that a lower level of self-efficacy for community life has an effect on the level of loneliness. One explanation for this may be that the participants of the previous study lived in supported residences. In this study, none of the people diagnosed with schizophrenia lived in such a situation. They also had to perform actions that were necessary for community life, such as self-care or coping behaviours related to treatment or symptoms. Thus, the domain of the level or significance of self-efficacy for community living was different from that of individuals living in supported residences. Ventura et al. (2004) reported that a lower level of self-efficacy hinders coping behaviour for community life in people diagnosed with psychiatric disorders. Therefore, a lower level of self-efficacy specific to daily life increases the level of loneliness.

Second, a noteworthy finding of this study is that a lower level of self-esteem is related to a higher level of loneliness. Lincoln et al. (2011) showed that lower self-esteeem is related to negative symptoms. In addition to these symptoms, cognitive impairments are significant among some individuals in the stable phase (Lehman
et al. 2006), making it difficult for some people diagnosed with schizophrenia to focus their attention, solve problems and speak fluently. The finding showed that a decreased ability to complete the activities performed before the onset of illness compels individuals to evaluate themselves negatively, which means that they cannot make correct judgments about their ability or strength, leading to greater loneliness.

Thirdly, the results of this study showed that being socially isolated is related to a higher level of loneliness (Schwarts & Gornemann 2009, Roe et al. 2011, 2012, Stein et al. 2013). In this study, social isolation was defined as a lack of family and friendship networks based on the LSNS-6 (Lubben et al. 2006). Regarding the function of social networks (Heaney & Israel 2008), social isolation refers to those who lack access to resources providing social support. Our study found that the degree of social support from family members or friends has an effect on loneliness.

Lastly, the results of this study showed that a higher level of community integration could reduce a level of loneliness. The previous research examined communities in which people with disabilities felt integrated, were provided with opportunities and places for learning community rules, felt a sense of belonging (McColl et al. 1998), and had distal support from community members (Wieland et al. 2007, Townley et al. 2013). Distal support arises from casual community relationships through regular contact with other individuals who live and work in the same community (Wieland et al. 2007) and contribute to community integration (Townley et al. 2013). Our findings indicated that the accommodating communities wherein people diagnosed with schizophrenia could live as a member decrease their levels of loneliness.

Implications for practice

Our research findings have major implications for practice for public health nurses and other health practitioners towards people diagnosed with schizophrenia in the community mental health field. Concerning individual factors, firstly, in terms of self-efficacy, ‘the illness management and recovery’ programmes (Mueser et al. 2002) have a positive effect on the self-efficacy for community life of people diagnosed with schizophrenia (Fujita et al. 2013). These programmes are now being conducted in hospitals; however, the dropout rate is high due to the burden of regular hospital visits (Fujita et al. 2013). The development and introduction of cooperation with community resources, such as community centres, can increase their participation in the programmes, thereby enhancing the level of self-efficacy for community life. Secondly, enhancing the perceptions of strength in people diagnosed with schizophrenia is essential for improving self-esteem because the concept of strength is the opposite of the negative image that individuals have about themselves (Frese et al. 2009). The nurses in mental health care in Japan use the techniques to capture the strength. The unique nursing techniques can be used in order to assist them with continuous community activity (Okuda & Tokunaga 2012), consequently that improves the self-esteem.

In terms of environmental factors, assessing the size of social networks and individuals’ relationships is necessary to prevent social isolation. Extending networking among people diagnosed with schizophrenia is important (Pahwa et al. 2014); thus, health practitioners should develop programmes that family members and friends can incorporate into their daily activities. In this way, the existing programmes of local activity support centres should be made available to family members and friends anytime they want to participate. Finally, improving community integration requires community intervention (Chan & Mak 2014) because it cannot be achieved entirely through an individual’s own effort, and cannot be accomplished by improving only formal support (Cohen & Iqbal 2014). Combining interventions that involve education about the illness and direct contact with people diagnosed with schizophrenia shows positive effects (Ling et al. 2014). Public health nurses in mental health care should cooperate with educational institutions, and community events are good opportunities for direct contact with people diagnosed with schizophrenia. The results of this study suggest that public health nurses in mental health care should work to develop a partnership with family members, community members and other health practitioners.

Limitations

There are several limitations in this study. Firstly, this study used a cross-sectional design, which means that it could not identify causal relationships between loneliness and each related factor. Secondly, the target population of this study was limited to one area in Japan, and thus the results cannot be easily generalized to other populations and geographical locations. Lastly, this study relied on participants’ self-reporting; as such, the possibility of bias in the responses of participating patients cannot be ruled out.

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