1 *Article*

2 The Mental Health Status and Intellectual Ability of
3 Unwed Mothers Dwelling in Korea Shelter Homes

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23 **Abstract:** Although the number of unwed mothers have mental health problems and intellectual
24 disability, little research have focused on their mental and cognitive status. Since there has been
25 public stigma of unwed mother in South Korea, they tend to conceal their status and less likely to
26 seek psychiatric and psychological help. In this context, this study aims to assess current status of
27 their mental health and intellectual characteristics. A total 48 unwed mothers from two shelter
28 homes in South Korea were agreed to participate in the study. To compare mental health and
29 intellectual abilities of unwed mothers with the general women population, reference data from
30 national studies was used. Unwed mothers were more likely to have mood disorder, post traumatic
31 stress disorder(PTSD), alcohol and nicotine use disorder, attention-deficit hyperactivity disorder
32 (ADHD) than the general women population. Among 48 participants, 20 (41.7%) were lower than
33 70 Intelligence Quotient (IQ) and the mean of IQ (78.31) was significantly lower than normalized IQ
34 mean of general women population. In logistic regression analysis, psychiatric disorders were
35 associated intellectual disability. This study confirmed that unwed mothers dwelling in Korean
36 shelter homes have more experience of mental disorders and lower intellectual ability than general
37 women population.

38 **Keywords:** unwed mother; mental health; intellectual ability
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40

41 1. Introduction

42   Childbirth of single mothers has increased in Korea [1]. Based on statistical data such as the
43 Population and Housing Census, the number of unmarried mothers is estimated at about 13,000,
44 which is increasing [2]. It is difficult to estimate correctly the number of unwed mother in Korea,
45 considering the fact that getting pregnancy without marriage is considered as shameful and
46 undesirable [3,4]. Since there has been public stigma of unwed mother in Asia countries, they tend to

47　conceal their status and less likely to seek proper support [5–7]. Due to many burdens of unwed
48　mothers, many Korean unwed mothers have decided to adopt their children. However, there has
49　been steady increase of child-rearing unwed mother in Korea. According to the report of Korean
50　Women Institution, the proportion of unwed mothers who rear their child have constantly
51　increased, from 5.8% in 1984 to 11% in 2001 and to 31.7% in 2005 [8]. Along with the recent increase
52　in the number of single mothers, they tend to determine to stay in shelter homes considered one of
53　the safe options for child-rearing. In order to understand unwed mothers, it is crucial to conduct
54　research about women staying in shelter.
55　　　　Recent researches have suggested that many unwed mothers are facing a diversity of
56　difficulties including economic deprivation, discrimination and biased stereotype [3,4,9]. Moreover,
57　they have experienced a wide range of psychiatric issues such as excessive stress and depression as
58　well as psychological problems such as social and emotional support [5,10,11]. Some researchers
59　turned out that the relationships between psychiatric disorder and intellectual disability of unwed
60　mothers [12,13]. As well as intellectual ability, usage of alcohol, nicotine, and anti-social behaviors
61　have affected the onset of early motherhood [13,14].
62　　　　Unfortunately, the majority of unwed mothers in Korea are still suffering from economic
63　difficulties and social prejudice even if the government support have widen and public awareness
64　have been higher [1,8,9]. Based on the fact that social policy for unwed mothers has not fully
65　supported a burden of unwed motherhood, comprehensive social welfare policy is essential to
66　handle these problems that unwed mothers have encountered in their child-rearing efforts [9].
67　Therefore, there is need for research to identify mental health and intellectual ability of unwed
68　mothers.
69　　　　As of now, there are few studies on psychiatric characteristics and intellectual ability of unwed
70　mother in Korea. Investigation of characteristics of unwed mother is essential to develop supportive
71　programs and establish policies. In this context, this study aims to investigate mental health and
72　intellectual ability with unwed mother, comparing the general women population in Korea.
73

74　**2. Materials and Methods**

75　_2.1. Participants and data collection_

76　　　　As part of the elimination of the medical and welfare blind zone from the Public Health Medical
77　Service Corporation, the corporation conducted a mental health assessment project for a single
78　mother living in a facility. Participants were recruited from two shelter homes that the one shelter
79　has six branches. Among the 60 unwed mothers stay in the shelters, 48 unwed mothers who were at
80　least 18 years old were agreed to participate in the study. Demographical information was presented
81　in the result section.
82

83　_2.2. General women population_

84　　　　Reference data were derived from a representative sample of Korean adult population,
85　consisted of 6,022 participants. The participants were selected by using a multi stage cluster
86　sampling method [15]. Trained interviewers completed in the home and accomplished face-to-face
87　interviews to each of the participants from 25 March 2011 to 23 December 2011. As the study aim is
88　to identity difference between unwed women and general women, the final sample composed of
89　3,714 women. The more detailed information about population and data collection has been
90　described in a previous study [16].
91

92 *2.3. Measures*

93 2.3.1. The Structured Clinical Interview for DSM-IV (SCID)

94 The Structured Clinical Interview for DSM-IV(SCID) was used to determine mental health
95 status of unwed mothers [17]. The Korean version of SCID has been validated [18]. The presence of
96 psychiatric disorders like current or lifetime mood disorder(major depression disorder, dysthymia,
97 bipolar disorder), post traumatic stress disorder(PTSD), alcohol use disorder, and nicotine use
98 disorder were measured. Obligatory questions, criteria from the American Psychiatric Association's
99 DSM-IV, a classification of rating symptoms and algorithm for a final diagnosis were administered.
100 The SCID allows interviewer to use all the information in rating the absence or presence of
101 symptom.

102 2.3.2. Adult ADHD Self-Report Scale (ASRS-v1.1)

103 The ASRS was developed to screen of adult attention-deficit hyperactivity disorder (ADHD) in
104 conjunction with all 18 DSM-IV Criterion A symptoms of adult ADHD [19]. The full ASRS is an 18
105 item self-report questionnaire. Of 18 questions, six questions were the most predictive of ADHD
106 symptoms [20]. In this study, six items were used to confirm adults suffering from the symptoms of
107 ADHD validated for use [21]. The participants who checked four or more marks within Part A were
108 regarded as having ADHD symptoms.

109 2.3.3. Korean Wechsler Adult Intelligence Scale-IV(K-WAIS-IV) Short Forms

110 The intellectual ability was examined using Korean Wechsler Adult Intelligence
111 Scale-IV(K-WAIS-IV) Short Forms, which was based on the criteria in Wechsler Adult
112 Intelligence-IV [22]. Four subsets form consisted of information, matrix reasoning, arithmetic,
113 symbol search. The short form was validated by Choi et al [23]. The cutoff score of Intelligence
114 Quotient(IQ) is 70 [24].
115

116 *2.4. Procedures*

117 The 48 unwed mothers were recruited from the two shelter homes of South Korea during the
118 period September 2016 to December 2016. Two research clinicians underwent training sessions for
119 administrating the SCID, K-WAIS-IV. The average administration time was ninety minutes. The
120 protocol of the present study was approved by the review board at Boramae Medical Center of
121 South Korea, and all procedures were completed in accordance with the guidelines of the Helsinki
122 Declaration.
123

124 *2.5. Statistical Analysis*

125 We analyzed descriptive statistics (mean, SD, frequencies) to examine the characteristics of
126 demographic variables (i.e., age, education, type of health insurance, employment, experience of
127 mental illness), psychiatric disorders as an indicator of mental health status (mood disorder, PTSD,
128 alcohol use, nicotine, ADHD), and intellectual ability. To assess the prevalence of psychiatric
129 disorders, two sample t-test for percent was conducted between 48 unwed participants and 3,714
130 general participants. The data were analyzed by logistic regression to examine the extent to which
131 association between psychiatric disorders and binary variables(unwed and general women
132 population). One sample t-test was conducted to measure the unwed participants' intellectual ability
133 is statistically different from a randomized population mean. Moreover, we performed logistic
134 regression to assess relation psychiatric disorder with intellectual ability. All the analyses were
135 completed using SPSS for Windows 18.0 (SPSS, Inc; Chicago, Illinois). All statistical tests were
136 two-sided and a P value < 0.05 was considered statistically significant.
137

138   **3. Results**

139   *3.1. Sociodemographic characteristics*

140   Sociodemographic information including age, years of education, types of medical insurance,
141   states of employment, and experience of mental illness of 48 Korean unwed mothers and 3,714
142   general women population were presented in the Table 1. Mean age of unwed mothers was 21.77
143   (*SD*=6.50) and mean of years of education was 11.22 (*SD*=2.30). The mean age of general women
144   population was 48.29 (*SD*=15.37) and mean of years of education was 11.02 (*SD*=6.27).
145

146   **Table 1.** Sociodemographic variables of the unwed mothers (*N*=48), general women
147   population(*N*=3,714)

	N(%)	
Variables	**Unwed mother**	**General women population**
Age (years)		
≤17	12(25)	0(0)
18-29	37(67)	457(12.3)
30-39	1(2.1)	772(20.8)
40-49	3(6.3)	740(19.9)
50-59	0(0)	699(18.8)
60-69	0(0)	636(17.1)
70-74	0(0)	410(11.0)
Education		
<Elementary school	0(0)	208(5.6)
Elementary school	0(0)	658(17.7)
Middle school	10(20.8)	449(12.1)
High school	30(62.5)	1195(32.2)
University	8(16.7)	1204(32.4)
Type of health insurance		
National Health Insurance(NHI)	19(39.6)	3,419(92.1)
Medical Aid(MA)	29(60.4)	111(3.0)
Employment		
Employed	30(62.5)	1,067(28.7)
Part time	0(0)	234(6.3)
Unemployed	18(37.5)	2,408(64.8)
Experience of mental illness		
Yes	10(20.8)	373(10)
No	38(79.2)	3092(83.3)

148

149   *3. 2. Mental health status*

150   Table 2 provides mental health problems (i.e., mood disorder, PTSD, alcohol use disorder,
151   nicotine use disorder, ADHD) of unwed mothers and general women population. The results
152   provide empirical evidence that unwed mothers more experienced psychiatric disorders than
153   normal population. In case of mood disorder, major depressive symptom (12.5%), dysthymia (6.3%),
154   lifetime bipolar disorder (12.5%) of unwed mothers were significantly prevalent than general
155   women population. Among the psychiatric disorders, lifetime PTSD (37.5%), lifetime alcohol use
156   disorder (50.0%), lifetime alcohol use disorder (41.7%) of unwed mothers were significantly different
157   from nomal population's mental status. Moreover, unwed mothers (12.5%) were substantially more
158   likely exposed to attention problems than other people.

159   Moreover, Table 2 presents the results from logistic regression to estimate odds ratio.
160   Compared with general women population, unwed mothers are more likely to experience
161   psychiatric disorders except for present PTSD and present alcohol use disorder. Of the psychiatric
162   disorders, the prevalence of lifetime nicotine use disorder (48.31 times) was the highest, followed by
163   lifetime PTSD, ADHD, lifetime alcohol, present nicotine, lifetime mood disorder, present PTSD, and
164   present alcohol.
165   To define the factors associate with psychiatric disorder of unwed mothers, we conducted
166   logistic regression analysis to adjust for the effect of variables. Intelligent ability is more likely to
167   relate with psychiatric disorder. The lower intelligence level unwed mothers have, the higher
168   portion of mental disorder they have.

169

170   **Table 2.** Mental health status of the unwed mothers and general women population

Symptom	N (%)		t	aOR(95% CI)
	Unwed mothers (*N*=48)	General women Population (*N*=3714)		
Mood Disorder				
Present*†	7(14.6)	154(4.1)	3.59	5.05(2.24-11.39)
Lifetime*†	26(54.2)	374(9.9)	9.96	10.54(5.92-18.79)
PTSD				
Present	2(4.2)	28(0.8)	2.56	5.72(1.32-24.74)
Lifetime*†	18(37.5)	77(2.0)	15.45	28.32(15.14-52.98)
Alcohol				
Present	2(4.2)	39(1.1)	2.01	4.10(0.96-17.47)
Lifetime*†	24(50.0)	183(4.9)	13.65	19.24(10.72-34.54)
Nicotine				
Present*†	4(8.3)	28(0.8)	5.48	11.97(4.03-35.56)
Lifetime*†	20(41.7)	54(1.4)	20.24	48.31(25.64-91.03)
ADHD				
Present*†	6(12.5)	25(0.7)	8.85	21.48(8.37-55.13)
Lifetime	-	-	-	-

171   Note. * $p < 0.05$ caculated by t-test; † $p < 0.05$ caculated by logistic regression; MDD, major depressive symptom;
172   PTSD, Post Traumatic Stress Disorder; ADHD, Attention-Deficit Hyperactivity Disorder. Ns do not always total
173   48(unwed mothers), 3714(general women population) because of missing responses on some variables

174

175   **Table 3.** Odds ratios from logistic regression analysis of the probability of psychiatric disorder

Variables	aOR (95% CI)	*p* value
Education year	1.41 (0.70-2.82)	0.340
Intelligent Quotient (IQ)	0.90 (0.82-0.99)	0.035
Type of health insurance		
National Health Insurance(NHI)	0.69 (0.08-5.65)	0.729
Medical Aid(MA)	1.00	

176

177

178   *3.3. Intelligent Quotient (IQ)*

179   Among 48 participants, 20 (41.7%) were lower than 70 and the mean of IQ (78.31) was
180   significantly lower ($t(47)=6.94$, $p < .05$) than 100 that normalized IQ mean of general women
181   population.
182

183   **4. Discussion**

184   The study focused on assessing current mental status of unwed mothers. Taken as a whole, the
185   findings in this study indicate that there is a significant difference on psychiatric characteristics
186   between unwed mother and general women population. This is, to our knowledge, the first study to
187   evaluate unwed mothers' mental health and intellectual problems in South Korea.
188   Unwed mothers are more likely to experience more psychiatric disorders than general women
189   population in present. Our findings are also in agreement with the study that reported a
190   significantly high rates of depressive symptoms for unwed mothers [5, 10, 25]. This also goes in line
191   with studies demonstrating that unwed mothers are more likely to consume alcohol and nicotine.
192   Even though unwed mothers have been stayed in residential facilities that prevent mothers from
193   drinking and smoking, they have been dependent to alcohol and nicotine. Prior studies suggested
194   that frequent use of drug use and smoking is strongly related to being early pregnant, considering
195   the fact that habitual use is a sign of having difficulties in their life [13, 14, 26]. Moreover, our data
196   showed that unwed mothers tent to have attention problems than general women. This finding
197   corroborates past research showing single motherhood are associated with attention-deficit
198   hyperactivity disorder [27, 28].
199   Aspects of lifetime, unwed mothers have more experienced mental illness. Importantly, the
200   ratio of lifetime disorders in unwed mothers was significantly higher than general women. Our data
201   indicated that unwed mothers are 28.32 times more likely to experience traumatic events than
202   general women population. Unwed mothers reported that they experienced sexual assault (12.5%),
203   physical violence (14.6%), social bullying (4.2%), and suicide (4.2%). This results is consistent with
204   prior researches that sexual and physical abuse have been related with detrimental outcomes like
205   risky sexual behavior and early pregnancy [29, 30]. However, some studies suggested that sexual
206   attitudes of the friendship and premarital sexual behaviors are more important indicators than
207   experience of sexual assault in pregnancy [31, 32]. Though the results is in conflict with our finding,
208   our study provide empirical evidence that women who have experienced traumatic events are
209   exposed to pregnancy.
210   In Korea society, single motherhood may face numerous difficulties. Some studies pointed out
211   that single mothers have suffered from a variety of obstacles such as social condemnation, crisis of
212   academic drop-out, living expenses, discrimination from work place, expenses of rearing children,
213   and so on[9, 33]. These are somewhat different to experiences of general women. Especially, this
214   may be more stressful to a person who is a teenager mother. Teenager mothers have stayed in
215   residential facilities as they does not prepared to make a living by themselves [4, 8, 33]. Because of
216   the social stigma, they tend to reluctant to have adequate care when they are pregnant [3, 7]. These
217   components are more at risk to unwed mothers. Considering the fact that unwed mothers are easily
218   exposed to risk circumstances from being pregnant [3, 32], this suggested that it is essential for
219   health authorities to have more systemic approach to unwed mothers.
220   In this respects, Korea health authorities is responsible to present proper intervention
221   concerning about unwed mothers. The policy debate concerning universal insurance coverage needs
222   to takes this into consideration. Health authorities of interventions aimed at supporting unwed
223   mothers should consider it possible to include mental health treatment components in formulating
224   policy. Furthermore, mental health professionals treating unwed mothers need to be sensitized to
225   their higher risk of psychiatric disorders, while community based authorities also need to be
226   sharpened to the mental state of single mothers.
227   In this study, unwed mothers were lower than general women population in intellectual ability.
228   In addition, psychiatric disorders are predicted by intellectual disability. This result is consistent

229   with previous studies showing that psychiatric disorder is associated with intellectual ability
230   [34–36]. Some researches indicates that bipolar disorder is significantly associated with intellectual
231   inefficiency [37, 38]. This indicated that education programs are necessary for unwed mothers to
232   prevent them from mental retardation. Further research is needed to illuminate the causal
233   relationship between psychiatric disorder and intellectual ability of unwed mothers.

234   This study had several limitations. First, the study is limited by selection bias. Our data
235   collection was conducted on the small sample from shelter facilities that has been unable to
236   represent the entire of unwed mothers in Korea. However, our findings can be empirical and
237   valuable information for unwed mothers. This is because participating in a study is difficult for
238   unwed mother, not considering the cultural characteristic like public stigma. Another limitation is
239   that our study does not consider environmental factors affecting unwed mothers like environmental
240   factors such as social support, economical support from the government. Lastly, longitudinal studies
241   would be able to yield a more comprehensive picture of how individual and environmental factors
242   influence unwed mothers and their children.

243   In spite of its limitation, our study confirmed that Korean unwed mother tend to suffer mental
244   disorder and intellectual disability. This study suggested that potential intervention designed to
245   advocate unwed mothers who rear their children out of stigma and social discrimination. These
246   findings will be useful for informing the policy makers and shelter workers charged with making
247   unwed-treatment decision to support self-reliant life.
248

249   **5. Conclusions**

250   This study confirmed that unwed mothers dwelling in Korean shelter homes have more
251   experience of mental disorders and lower intellectual abilities than general women population.
252   Therefore, a systemic approach to alleviate unwed mothers' psychiatric disorders should contribute
253   to develop supportive programs or establish policies to improve their quality of life.
254

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