The Relationship Between Mental Health and Social Solidarity Among Apartment Residents in Shahrekord, Iran

Forouzan Ganji, MD*, Afsaneh Nekooee, MSc*, Faranak Saifdari, MSc*
Neda Parvin, MSc*, Akbar Shafei, MSc*, Hanife Ganji, MD

(Received: 2 Jan 2012; Revised: 23 Jan 2012; Accepted: 21 Feb 2012)

Objective: To examine the relationship between psychological well-being and social solidarity of apartment residents in Shahrekord, Iran.

Methods: A sample of 200 apartment dwellers was selected randomly. Fessler Social Solidarity Inventory and General Health Questionnaire were used to gather data.

Results: Using partial correlation test and having controlled the effect of age, sex and education, we found significant relationship between mental health and social solidarity ($r = 0.47; p= 0.023)$. After controlling education and marital status, it was also revealed that women were in a better solidarity situation compared to men ($p< 0.05$).

Conclusion: There is a relation between the mental health and social solidarity of apartment residents in Shahrekord. Good mental health accompanied with better social solidarity.

Declaration of interest: None.

Citation: The relationship between mental health and social solidarity among apartment residents in Sharekord, Iran. Ganji F, Nekooee A, Safdari F, ParvinN, kbar Shafei A, Ganji H. Iran J Psychiatry Behav Sci 2011; 6(1): 20-5.

Keywords: Apartment resident• Individuals’ relations• Mental health• Social solidarity

Introduction

In recent decades, an insatiable demand has been made for urban housing due to the growth of population in Iran, especially in urban areas. According to estimates, about 22 million houses are needed for 100 to 120 million Iranians by the year 2021 (1).

This high demand for housing has led to multifarious problems for city dwellers. The vertical growth of cities due to multi-storey residential apartment buildings has not only changed the civil architecture, but also has created its own peculiar culture. In the current situation, ‘a place of one’s own’ has gradually lost its connotative meaning and as a result achieving a sense of ‘us’ seems to be a urgent and demanding task. That is, apartment dwelling culture has not yet been institutionalized and it is difficult to draw a distinct line between private, public and legal rights of citizens (2). On the other hand, residents of apartments have their own subcultures and are not in many cases familiar with the basics of apartment life.

“Neighborhood problems” is a broad term that encompasses both physical and material features of the neighborhood as well as elements of social disorder (e.g. crime, loitering, street conflict or illegal drug use) (3). Researchers hypothesize that neighborhood problems may be a source of chronic stress that can contribute to poor mental health outcomes (4).

The concept of social solidarity (and the related concept of social cohesion, social capital) has gained very prominence in the social and public health literature in recent years although the opinion as far back as the 19th century (5-7). Social solidarity refers to the integration, and degree and type of
integration, shown by a society or group with people and their neighbors. It refers to the ties in a society that bind people to one another (8).

Neighborhood social solidarity may influence psychosocial processes by providing individuals with a source of meaningful connection and mutual respect and increasing residents’ sense of purpose in life (9, 10).

All these make it imperative to know the culture and social values of apartment dwelling and its relations. The main objective of the present study was to investigate the relationship between social solidarity and mental health among apartment dwellers in Shahrekord, Iran.

Materials and Methods

Design and setting
This cross sectional study was carried out in 2007 in Shahrekord, Iran.

Participants and sampling
The participants were chosen from wives or husbands above the age of 18. Decision was also made to exclude residents with less than one year of stay in the neighborhood. The target population comprised of all apartment dwellers in Shahrekord among whom 200 were selected randomly for this study. For the determination of sample size, a 95% confidence interval and a 7% sample error were defined at first; the residential areas dense with apartment buildings were identified. Then, some blocks were randomly selected.

Measures and Measurement
The instruments used in this study were a checklist and two questionnaires which were supplemented with interviews. In checklist, demographic data including age, gender, education, occupation, and marital status, duration of residency in the neighborhood, total floor and apartment units were asked. Questionnaires included Fessler Social Solidarity Inventory (11) and General Health Questionnaire (GHQ) (12).

Social solidarity questionnaire was translated to Persian and was modified according to the participants’ culture. In order to adapt the questionnaire to the realities of Iranian context, validity of the questionnaire as a data gathering instrument, was confirmed by selected experts in the fields of sociology, psychology and urban affairs and Cronbach's alpha coefficient (equal to 0.79) was calculated which confirmed its reliability. The final modified questionnaire had 35 items, with 5-scale Likert responses [from 5 (very good) to 1(very poor)]. Total score ranged between 35 and 175, in which lower the scores indicated lower solidarity state. Total scores were divided in 5 parts, 35-63 as very poor, 64-91 as poor, 92-119 as barely acceptable, 120-147 as good and 148-175 as very good.

The GHQ is a measure of current mental health which was developed by Goldberg in 1970 (12). It has been extensively used in different settings and cultures. The questionnaire has also been standardized and contextualized according to the peculiarities of Iranian setting (13, 14). This instrument has been used in various studies so far and consists of 28 items. The answer to each item has four scales of 0: 'not at all', 1: 'same as usual', 2: 'more than usual' and 3: 'much more than usual'. The cut-off score was set at 23; all the lower scores were indicative of mental health and the higher scores indicated imbalance in the mental well-being.

Codes of ethics
Research Ethics Committee of Shahrekord University of Medical Sciences approved the study and all participants gave written informed consent.

Statistical analysis
Analyses were performed using SPSS version 13. Data were described using mean and standard deviation (SD). For the analyses, statistical tests such as the Spearman correlation test and chi-squared and partial correlation test were used. P values less than 0.05 were considered significant.
Results

Table 1 presents the demographic profile of 200 respondents. Mean (±SD) age of the participants was 30.9 (±8.8) years.

Table 1. Demographic profile of respondents (N=200)

| Demographic profile | N  | %  |
|---------------------|----|----|
| Female              | 100| 50 |
| Married             | 100| 50 |
| Education           |    |    |
| Less than high school| 10 | 5  |
| Some college + BA degree | 140| 70 |
| Graduate training   | 50 | 25 |
| No job or housewife | 90 | 45 |
| Neighborhood characters |    |    |
| Mean ± SD           |    |    |
| Number of years living in neighborhood | 6.2 ± 6.4 |
| Number of units in apartment | 7.3 ± 2.6 |

Social solidarity

Social solidarity of the participants is presented in Table 2. We found significant relationship between social solidarity and duration of residency in neighborhood among the participants (p<0.05; r = 0.43). The relationship was also significant between age and social solidarity (p<0.05; r = 0.49). In addition, women showed a much better situation in terms of social solidarity compared to men when education and marital status were controlled (p<0.05). Besides, those with higher educational degrees enjoyed a higher level of social solidarity, yet this difference was not statistically significant (P>0.05).

Table 2. Social solidarity of the participants (N = 200)

| Social solidarity | N  | %  |
|-------------------|----|----|
| Very Good         | 40 | 20 |
| Good              | 46 | 23 |
| Barely Acceptable | 38 | 18 |
| Poor              | 40 | 20 |
| Very Poor         | 38 | 19 |

Mental Health

Mean (±SD) mental health score of the sample was 17.1 (± 11.3). Overall, 31% of mental health scores found more than cut point. We could unravel significant relationship between gender and education with mental health. There was also a significant relationship between mental health scores of questioners and number of units in apartment (p<0.05; r = 0.51). Using partial correlation test and controlling the effect of age, sex and education, we found significant relationship between mental health and social solidarity (p<0.05; r = 0.47).

Discussion

Our study showed that high social solidarity has positive relation with mental well-being of the participants. It demonstrated that buildings’ environment and neighborhood associated to mental health of the residents. Our study found duration of residency in the apartments was associated with improved social solidarity. Better social solidarity was associated with an increase in the age of the participants. We also found that poorer mental health of the participants was associated with an addition in the number of units in each apartment.

Our study supports previous finding suggesting an association between neighborhood social solidarity and mental health outcomes (4, 9, 10, 15). Matt et al. in a review also illustrated that poor psychosocial environments may be health damaging and contribute to health inequalities (16). In another study, Echeverria et al. found that individuals living in the least problematic neighborhoods were significantly less likely to be depressed, to smoke, or to drink. Socially cohesive neighborhoods were associated with increased depression, smoking, and not walking for exercise. Results persisted after adjusting for individual-level variables (17).

The literature reports an association of advanced social solidarity with better mental health (18-21). Lee in a study on social solidarity showed the similar results that verifies the findings of our study (22). Another study also found that neighborhood social cohesion, measured by trust and reciprocity, is associated with higher self-rated health. However, social participation did not appear to be associated with better health in this predominantly low income neighborhood (23). The physical environment may have an indirect influence on mental health by changing psychosocial processes with known mental health
consequences. Personal control, socially supportive relationships, and restoration from anxiety and exhaustion are all affected by features of the building environment. It is also likely that some individuals may be more mentally endangered by impacts of the building environment.

Social isolation of mothers and limited playing opportunities for children are among some of the suspected reasons for the impact of high-rise apartments on psychological distress. In many high-rise apartments, particularly for low-income families, insufficient resources are assigned to spaces that are specified for the development and maintenance of social networks.

Parents of young children in large multiple-unit apartments often deal with the lack of nearby playing spaces by keeping children inside their houses. Such restrictions increase intra-familial conflicts, reduce play opportunities for children, and consequently make parents not so willing to get to know their neighbors. On the other hand, people feel better and have better mental health when they can control their environment (24).

There seems to be a direct relationship between social segregation factors or lack/low levels of social solidarity and the absence of the necessary skills for social interaction, lack of apartment management, the prevalence of diverse ethnic, linguistic, occupational and social subcultures, the paucity of daily interaction among dwellers due to their daily occupations, and the fact that many of the residents have rented their places and are therefore short-term residents, so as to make positive relationship between social solidarity and during of the residency in the apartments. Overall longer residency in the apartments causes the residents to get more acquainted with their neighbors and make them establish a consistent relationship with each other and adjust themselves to the current conditions of their apartments.

It is unclear how representative our study is of the whole community; however, women had a better social solidarity status than men. Dunn et al. found gender differences in the relationship between housing, socioeconomic status, and self-reported health status (25).

Most probably, the higher social solidarity among women pertains to their higher levels of participation and therefore their increased interaction with other residents. Galab and Rao reported that the solidarity and unity among women members is one of the most important benefits as it gives them a forum to share their problems and seek help (26). In addition, higher education among residents, and as a result change in their perspective, seems to have positive impact on their social ties and their ability to adjust themselves to their context. This is achieved through their heavier supervision over their children conduct and their adaptation to the cultural specifics of living in apartment.

Most of the participants in our study enjoyed an acceptable level of mental well-being. In Pollack et al. study in Germany about half of the participants had signs of mental problems. There is likely a relationship between mental well-being of the residents and the less number of the apartments and consequently fewer problems in their social environment (27).

Our study had some limitations. One limitation is that we did not measure sub scores of GHQ. An additional limitation was that our study design did not allow us to determine direction or the mechanism of the association between mental health and social solidarity.

**Conclusion**

Based on obtained results, our hypothesis regarding association between social solidarity and mental health is confirmed. Longitudinal studies are needed to determine the effect of interventions targeting neighborhood and social relations on population’s health.

**Authors’ Contributions**

FG conceived and designed the evaluation and helped to draft the manuscript. AN and FS participated in designing the evaluation.
and performed the statistical analysis. NP revised the manuscript. ASh and HG participated in sampling of dissertation and collected the clinical data. All authors read and approved the final manuscript.

Acknowledgements
This research as a dissertation has been sponsored by the vice chancellor of research, Shahrekork University of Medical Sciences. We wish to thank those who were closely involved in this study.

References
1. Shie E. [New residential areas crisis in the large cities of Iran]. Social Welfare Quarterly 2005; 4 (16): 365-79. Persian.
2. Simbar F. [The issue of housing and its economic, social, and cultural dimensions]. J Political Econ Ettelaat. 2002; 16: 175-6. Persian.
3. Ross, C. E. Mirowsky, J. Neighborhood disadvantage, disorder, and health. J Health Social Behav 2001; 42: 258-76.
4. Latkin CA, Curry AD. Stressful neighborhood and depression: a prospective study of impact of neighborhood disorder. J Health Soc Behav 2003; 44(1): 34-44.
5. Durkheim E. A Study in Sociology. In: Suicide. New York: Free Press. 1997. p. 145-151
6. Sampson, Robert J. The neighborhood context of well being. Perspectives in biology and medicine 2003; 46(3): S53-S64.
7. Sampson, RJ, Raudenbush S, Earls F. Neighborhoods and violent crime: A multilevel study of collective efficacy. Science 1997; 277: 918-24.
8. Emile Durkheim. His life and Work In: Lukes S, Collins Dictionary of Sociology. London: Allen Lane; 1973. p. 406-621.
9. Kawachi I, Berkman F. Social cohesion, social capital and health. In: Berkman LF, Kawachi I. Social epidemiology. New York: Oxford university press; 2000. p. 174-90.
10. Silver E, Mulvey EP, Swanson JW. Neighborhood structural characteristics and mental disorder: Faris and Dunham revisited. Soc Sci Med 2002; 55(8): 1457-70.
11. Fessler DR. The development of a scale for measuring community. Rural sociology 1952; 17: 144-152.
12. Goldberg DP, Hillier VF. A scaled version of the General Health Questionnaire. Psychol Med 1979; 9(1): 139-45.
13. Noorbala AA, Bagheri Yazdi SA, Mohammad K. [The validation of General Health Questionnaire-28 as a Psychiatric Screening Tool]. Hakim 2009; 11(4): 47-53. Persian.
14. Noorbala AA, Mohammad K, Bagheri Yazdi SA. [Validation of GHQ-28 in Iran]. Hakim 1999; 5: 101-10. Persian.
15. Aneshensel CS, Sucoff CA. The neighborhood context of adolescent mental health. J Health Soc Behav 1996; 7(4): 293-310.
16. Egan M, Tannahill C, Petticrew M, Thomas S. Psychosocial risk factors in home and community settings and their associations with population health and health inequalities: A systematic review. BMC Public Health. 2008; 8: 239.
17. Echeverria S, Diez-Roux AV, Shea S, Borrell LN, Jackson S. Associations of neighborhood problems and neighborhood social cohesion with mental health and health behaviors: the Multi-Ethnic Study of Atherosclerosis. Health Place. 2008; 14(4): 853-65.
18. Araya R, Dunstan F, Playle R, Thomas H, Palmer S, Lewis G. Perceptions of social capital and the built environment and mental health. Soc Sci Med. 2006; 62 (12): 3072-83.
19. Wilson K, Elliott S, Law M, Eyles J, Jerrett M, Keller-Olaman S. Linking perceptions of neighbourhood to health in Hamilton, Canada. J Epidemiol Community Health 2004; 58: 192-8.
20. Kim, Joongbaeck. and Lee, Jinwoo. Neighborhood Disorder, Social Relationships, and Adult Depression. In: The annual meeting of the American Sociological Association; TBA, 2007 Aug
11 New York: New York City; 2007.
21. Truong KD, Ma S. A systematic review of relations between neighborhoods and mental health. J Ment Health Policy Econ. 2006; 9(3): 137-54.
22. Lee A, Browne MO. Subjective well-being, sociodemographic factors, mental and physical health of rural residents. Aust J Rural Health 2008; 16(5): 290-6.
23. Sapag JC, Aracena M, Villarroel L, Poblete F, Berrocal C, Hoyos R, et al. Social capital and self-rated health in urban low income neighbourhoods in Chile. J Epidemiol Community Health 2008; 62(9): 790-2.
24. Evans GW. The Built Environment and Mental Health. J Urban Health: Bull N Y Acad Med 2003; 8 (4): 536-55.
25. Dunn JR, Walker JD, Graham J, Weiss CB. Gender differences in the relationship between housing, socioeconomic status, and self-reported health status. Rev Environ Health. 2004; 19(3-4): 177-95.
26. Galab S, CN Rao, Women's self-help groups, poverty alleviation and employment, Economic and Political Weekly 2003; 38(12): 1274-83.
27. Pollack C, Von dem Knesebeck O, Siegrist J. Housing and health in Germany. J Epidemiol Community Health. 2004; 58(3): 216-22.
Comparison of Two brands of Methylphenidate (Stimdate® vs. Ritalin®) in Children and Adolescents with Attention Deficit Hyperactivity Disorder: A Double-Blind, Randomized Clinical Trial

Naser Khodadust MD**, Amir-Hossein Jalali, MD**, Masoud Ahmadzad-Asl, MD***, Noushin Khademolreza, MD*, Elham Shirazi, MD**

(Received: 24 Sep 2011; Revised: 2 Dec 2011; Accepted: 31 Jan 2012)

Objective: To compare the effectiveness and safety of the methylphenidate produced in Iran (Stimdate®) with its original brand (Ritalin®) in children with Attention deficit hyperactivity disorder (ADHD).

Methods: In this double-blinded randomized clinical trial, 30 patients with ADHD who were 6 to 16 years old, were divided into two groups: 15 in Stimdate® and 15 in Ritalin® group. The two groups were compared for side effects profile, Conner’s Parent’s Rating Scale-Persion version (CPRS-R), Child Symptom Inventory-4 (CSI-4), Clinical Global Impressions (CGI), and Children’s Global Assessment Scale (CGAS), at baseline and at the 4th and 6th weeks.

Results: The subjects showed significant decreases in the CPRS-R and CSI-4 scores and significant increase of CGAS scores during the follow-up, but there were no significant difference between Stimdate® and Ritalin® group, regarding the pattern of changes observed. The mean therapeutic dose and the number of side effects were not significantly different between the two studied groups.

Conclusions: Both Stimdate® and Ritalin® had comparable clinical efficacy and safety in children with ADHD.

Declaration of interest: None.

Clinical Trial Registration-URL: http://www.irct.ir. Unique identifier: IRCT201106306923N1.

Citation: Comparison of two brands of methylphenidate (Stimdate® vs. Ritalin®) in children and adolescents with attention deficit hyperactivity disorder: a double-blind, randomized clinical trial. Khodadust N, Jalali AH, Ahmadzad-Asl M, Khademol N, Shirazi E. Iran J Psychiatry Behave Sci 2012; 6(1): 26-32.

Key words: ADHD • Ritalin • Side effects • Stimdate • Therapeutic effect

Introduction

Attention deficit hyperactivity disorder (DHD) is one of the most prevalent diagnoses in pediatric psychiatry worldwide, with the rate of 5-10%, which spans preschool to adult years (1-3). The disorder has severe dysfunctional symptoms which affect personal, social, and educational aspects of patients’ life and therefore necessitates intense treatment (4,5). ADHD is known to have heterogeneous etiological pathways such as genetic, neurologic, environmental, and other factors that influence early neurological and brain development. Reported etiologies include prenatal stress, low birth weight, prenatal smoking and alcohol use, obstetric complications, head injury, and epilepsy (6). A strong body of evidence suggests that central nervous system stimulants (e.g., methylphenidate; MPH) are the most effective therapies available in controlling ADHD symptoms throughout the day, thus are proposed as its first line therapeutic medications (7). The first report of stimulant use to treat ADHD was in 1937 (8). Seventy-five percent of children respond to the first stimulant medication trial (9-12). The data

Authors’ affiliation: * Psychiatrist, Mental Health Research Center, Tehran Psychiatric Institute, Tehran University of Medical Sciences and Health Services, Tehran, Iran. ** Assistant Professor of Psychiatry, Mental Health Research Center, Tehran Psychiatric Institute, Tehran University of Medical Sciences and Health Services, Tehran, Iran. *** Resident of Psychiatry, Mental Health Research Center, Tehran Psychiatric Institute, Tehran University of Medical Sciences and Health Services, Tehran, Iran.

• Corresponding author: Elham Shirazi MD, Mental Health Research Center, Tehran Psychiatric Institute, Tehran University of Medical Sciences and Health Services, Tehran, Iran. Address: No.1 Mansouri St, Niyayesh St, Sattarkhan Ave, Tehran, Iran. Telephone: +98 21-66506862 Fax:+98 21-66506862 Email: e_shirazi@tums.ac.ir
also consistently indicate that MPH is more efficacious than no pharmacological interventions.

MPH, a psycho stimulant and a derivative of amphetamine, is a controlled drug that is recommended for use as part of treatment programs for children with a confirmed diagnosis of ADHD (13). MPH, better known by its trade name Ritalin® (manufactured by Novartis), has been used to treat ADHD since 1954. It is also noteworthy that there exist other pharmacological and non-pharmacological treatments for patients with ADHD such as bupropion, clonidine, guanfacine, moclobemide, selegiline, modafinil and atomoxetine as well as psychoeducation, psychotherapies, and family interventions (7, 9, 14-21).

In developing countries like Iran, the original brand of the drug is not widely distributed and its price is beyond the purchasing power of most of patients. Furthermore, insurance companies do not usually cover the aforementioned imported drugs.

There are some brand names of MPH in Iran, mostly Ritalin® (the original brand of MPH) manufactured by Novartis Company and Stimdate® (Local Brand of MPH) manufactured by Iranian Mehrdaru Company in Iran. As mentioned earlier, prescribing Stimdate® instead of Ritalin® in ADHD patients is somewhat an obligation. The ethnic, cultural, and economic diversities may play a role in medication efficiency, by affecting the adherence to specific types of medication brands, and therefore the rate of symptoms relief achieved by each drug (22).

In this study we aimed to compare the therapeutic effect of Ritalin® made by Novartis Company with Stimdate® made by Iranian Company of Mehrdaru in children and adolescent with ADHD in Iran. We designed this study to compare these two drugs in terms of their effect on ADHD symptoms, which would prepare us for future assessment of drug efficiency in community.

**Materials and Methods**

**Participants**

Thirty 6-16 years old children and adolescents who were diagnosed as having ADHD (combined type) by means of The Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (DSM-IV-TR) (4), Children Symptom Inventory-DSM-IV version (CSI-4), and clinical judgment of a child and adolescent psychiatrist and a senior resident of psychiatry, were recruited in the study according to convenient sampling method, from patients referred to the outpatient psychiatric clinics of Tehran University of Medical Sciences affiliated hospitals including Hazrat Rasul-Akram (S) hospital clinic, and clinic of Tehran Psychiatric Institute, Tehran, Iran.

All participants have to met the following criteria to be included in the study: 1) being 6-16 years old; 2) meeting the DSM-IV diagnostic criteria for ADHD; 3) No psychological or medical treatment received in the last 4 weeks before the study; 4) having informed written consent signed by parents for participating in the study; 5) not having co morbid conditions [please check to be correct] including conduct disorder, pervasive developmental disorder, mood disorders, Tourette’s disorder, and psychotic disorders; and 6) the ability to comply with the study’s visits schedule. No monetary compensation was provided to the families for participation in the study. The exclusion criterion were the following: 1) the presence of clinically significant gastrointestinal problems, cardiovascular diseases, glaucoma, and seizure disorder, 2) suspicion or confirmation of substance abuse by patients or a family member; 3) presence of mental retardation according to educational history or, having an IQ score less than 70; 4) allergy to stimulants; and 5) having to receive any psychiatric or somatic medication (except Ritalin or Stimdate) during the study.

Two patients were excluded from the study. The first was case No. 17 in Stimdate® group who was excluded because he fainted in the 3rd week of treatment, and the second one was case No. 23 in Ritalin® group who experienced several side effects at the first week of treatment with Ritalin®.

**Intervention**

This study was a randomized double blind-
controlled trial with active control, to compare the clinical efficacy of Stimdate® and Ritalin®. Thirty patients were allocated to each group. We used sequentially numbered containers (SNCR) method for randomization. All of the containers were tamper proof, equal in weight, and similar in appearance. The first researcher allocated a series of container to patients with the code of “1” or “2”. The second researcher performed the assessments and was blinded to the groups.

We used an active control (positive control) Stimdate® tablet were produced in the same shape, color, and weight similar of Ritalin®. We used the same containers for both groups.

Before entering the cases in the study, a complete physical exam during which the subject’s heart rate, blood pressure, and weight were measured, was performed. This exam was also repeated in the 4th week to exclude any case with possible problems. The treatment protocols for both Ritalin® and Stimdate® groups were as follows: starting with 5 mg at morning and noon and weekly increments by 5mg in each dose, until reaching the maximum dose of 20mg at morning and noon in week four.

In case the weight of the child was less than 20 kg, the maximum daily dose would not exceed 30mg. The treatment dose for the 5th and 6th weeks was determined according to the best treatment response during the 1st to 4th weeks.

Main measurements

The Standard Persian version of the Conner’s Parents Rating Scale-Revised (CPRS-R) was used for the assessment of the severity of ADHD. The CPRS-R is used widely in measurement of the treatment efficacy and for outcome assessment purposes in ADHD children and adolescents (aged 3-17). The test has been reported to have the validity rate of 0.84 (23). The Child Symptom Inventory-DSM-IV version (CSI-4) (ADHD part) can be used for diagnostic purposes in clinical settings, and is also used to measure symptom severity by clinicians, teachers and parents (24, 25). The internal consistency, and reliability for CSI-4 has been reported to be 0.74-0.94 in the literature and it has acceptable criterion validity (25, 26). The CGI Scale (25) is used by clinicians, to rate the severity of the illness, its changes over time, and the efficacy of medications which are used in the treatment process, taking into account the patient’s clinical condition and the severity of the side effects. The CGAS (27,28) is used to measure the overall functional status and functional disturbances in children and adolescents. The CGI and CGAS have showed acceptable reliability and validity scores in different studies (29-31).

CPRS-R (32) and drug side effects were assessed at baseline and by weekly telephone calls thereafter, in the subjects. CSI, CGI, and CGAS were completed at baseline and at the end of the 4th and 6th weeks of the study.

Statistical analysis

We used SPSS software for windows (Ver. 11.5) (SPSS Inc. Chicago, Ill) for data analysis. Descriptive analyses were generated for all parameters. Differences in CPRS-R, CSI, CGAS, and CGI parameters were calculated in each visit. Analyses of the efficiency, based on the differences in scores of the parameters, were compared between the Ritalin® and the Stimdate® groups, using paired t-test and repeated measures analysis. The differences of CPRS-R scores in the 1st, 2nd, 3rd, 4th and 6th weeks, and CSI and CGAS scores, in the 4th and 6th weeks were calculated for each case. Since age is a confounding factor in the performance of most cognitive tests, we used the age of the participants as a covariate during analyses. All tests were two-sided with determining 0.05 as the level of significance.

Results

The mean (SD) ages of the subjects were 9.2 (±0.5) and 8.33 (±0.5) years in Ritalin® and Stimdate® groups, respectively (P=0.21). The Ritalin® group consisted of 12 males and 3 females; and the Stimdate® group had 15 males (P= 0.22) (Table 1).

The mean (±SD) CPRS-R score was 50.33 (±2.7) for the Ritalin® group and 55.7 (±1.9) for the Stimdate® group, before treatment.
The CPRS-R score showed significant decrease in both groups, from baseline to the 6th week (P<0.01). There were no significant differences in the pattern of CPRS-R score’s reductions between the two treatment groups (Table 2).

Table 1. Baseline characteristics and treatment profile of subjects treated with Ritalin® and Stimdate®

|                       | Ritalin® group | Stimdate® group | P.value |
|-----------------------|----------------|-----------------|---------|
| Age; years old, Mean±SD | 9.2±0.5        | 8.3±0.5         | N.S.†   |
| Gender                |                |                 | N.S.    |
| Male, n               | 12             | 15              |         |
| Female, n             | 3              | 0               |         |
| Ethnicity             | All Persian    | All Persian     | N.S.    |
| Final treatment dose; mg, Mean±SD | 29.2±9.1 | 31.4±8.6 | N.S.   |
| Number of side effects n, Mean±SD | 1.6±1.5 | 2.1±2.5 | N.S.   |

†N.S.: Not Significant

Before treatment, the mean (SD) CSI scores were 34.8 (±1.6) and 37.6 (±1.5), and CGAS values were 57 (±5.9) and 56.6 (±6.1), for the Ritalin® and Stimdate® groups, respectively (Table 1 and Fig. 1). The Ritalin® and the Stimdate® groups were similar according to their CPRS-R, CSI, and CGAS scores, before treatment (P > 0.05) (Table 2).

Mean (SD) values for CGI in the 4th and the 6th weeks after treatment were 1.57 (±0.2) and 1.62 (±0.3) for the Ritalin® group and 1.64 (±0.2) and 1.33 (±0.2) for the Stimdate® group, respectively (Figure 1).

There were significant decreases in CPRS-R and CSI scores, and also significant increase in CGAS scores, in both groups during the follow-up period, but CGI showed no significant change during this period in any of the groups (Table 2 and Figure 1). However, there was no significant difference between the two groups in terms of the change patterns of the aforementioned parameters (Table 2 and Figure 1).

The mean (SD) of final treatment doses which were defined as the mean doses of drugs in the 4th to 6th weeks were 29.2 (±9.1) mg in the Ritalin® group and 31.4 (±8.6) mg in the Stimdate® group (P = 0.59). The mean (SD) number of experienced side effects, was higher in Stimdate® group, in comparison to the Ritalin® group, but it was not statistically significant (2.13 (±2.5) vs. 1.6 (±1.5), respectively; P> 0.05).

Table 2. Measured parameters of ADHD subjects in Ritalin® and Stimdate® groups during follow up.

|                     | Ritalin® group | Stimdate® group | P.v. †‡ |
|---------------------|----------------|-----------------|---------|
| CPRS-R Mean±SD      | 50.3±2.6       | 14.7±3.4        | 0.02    |
| CSI; Mean±SD        | 10.3±3.5       | 14.0±4.5        | 0.02    |
| CGI; Mean±SD        | 1.57±0.2       | 1.62±0.3        | N.S.    |
| CGAS; Mean±SD       | 85.2±2.7       | 85.2±2.7        | N.S.    |

†N.S.: Not Significant; †: all P.values were calculated by repeated measures test, §: repeated measures test within groups changes in score in follow up period, ‡: test for differences between groups in pattern of changes during follow up.

![Figure 1. Changes in CPRS-R, CSI, and CGAS during follow up in Ritalin® and Stimdate® groups](https://www.SID.ir)
Discussions

ADHD is one of the most prevalent behavioral and psychiatric disorders among children worldwide (2). According to the high prevalence of ADHD among children and the need to provide patients with accessible and effective pharmacologic therapy, we performed this study to compare the effectiveness of methylphenidate produced in Iran (Stimdate®) with its original brand (Ritalin®). The two study groups were similar according to their age, sex, and intensity of disease (according to the CPRS-R, CSI, and CGAS scores) before treatment. Generally Stimdate® showed more intense reduction in the CPRS-R, CSI, and CGAS scores. However, our finding proposes that the amount of this reduction was not statistically different from that of the Ritalin® group.

Our study revealed that likewise baseline characteristics and treatment profile of the two groups, the measured efficacy parameters of ADHD subjects showed no significant differences between Stimdate® and Ritalin®. In comparison to Ritalin®, considering the lower price of Stimdate® and its broader distribution in our country, which provides a wide and easy accessibility to this medication, it seems that Stimdate® can show even more efficiency in the community scales, during the treatment process of ADHD subjects in Iran, however this can be an issue that needs further and more comprehensive studies to be confirmed. Furthermore, the total number of side effects experienced by the subjects of the Stimdate® group, was not significantly different from those of the Ritalin® group, that can emphasize the comparable safety profile of both medications MPH in different forms of release (instant, extended, sustained, and so on) is the most common drug used for ADHD worldwide (33-36) and there is an emerging need to provide efficient medication supplies for children and adolescent with ADHD throughout the country.

In a similar study, Mohammadi et al. (37) Compared sixty children with ADHD treated with Stimdate® and Ritalin® and showed no significant differences between the two groups regarding Attention Deficit Hyperactivity Rating Scale (38). However, they did not report other parameters that we provided in our study such as the CPRS-R, CSI, and CGAS scores. While these two studies have similar results and methodologies, except regarding their sample sizes and measured parameters, we believe that our report would expand the body of evidence for similarities of these two brands.

Because of the short follow-up duration, and the small sample sizes, our study lacks to prepare generalizable data, therefore regarding the importance of prescribing an effective medication for ADHD patients, and the wide use of these brands in our country, we suggest further multi-center studies in this issue.

Conclusion

We recommend clinicians to choose Ritalin® or Stimdate® according to the patient’s preferences, sustained accessibility, primary response to treatment, and possible side effects encountered in course of treatment. This means that none of these drugs have been proved to be superior to the other one.

Acknowledgments

Authors wish to give their special thanks to the staff of Tehran Psychiatric Institute, and of the child and adolescent psychiatric clinic of Hazrat Rasoul Akram (S) hospital, for their support in data collection.

Authors' contributions

NKD participated in designing and manuscript preparation. NKR participated in allocation, and the initial and follow-up clinical assessments. AHJ re-evaluated the clinical data and revised the manuscript. MAA interpreted the clinical data, performed the statistical analysis and prepared the draft and revised the manuscript. ES conceived and designed the evaluation, re-analyzed the data, and revised and finalized the manuscript. All authors have read and have approved the final manuscript.
References

1. Biederman J. Attention-deficit/hyperactivity disorder: a life-span perspective. J Clin Psychiatry 1998; 59(7): 4-16.
2. Faraone S, Sergeant J, Gillberg C, Biederman J. The worldwide prevalence of ADHD: is it an American condition? World Psychiatry 2003;2(2): 104-13.
3. Faraone SV, Biederman J, Spencer T, Wilens T, Seidman LJ, Mick E, et al. Attention-deficit/hyperactivity disorder in adults: an overview. Biol Psychiatry 2000; 48(1): 9-20.
4. American Psychiatric Association. Diagnostic and statistical manual of mental disorders (DSM-IV-TR). 4th ed. Washington, DC: American Psychiatric Association; 1994.
5. Barkley RA, Fischer M, Smallish L, Fletcher K. Young adult outcome of hyperactive children. J Am Acad Child Adolesc Psychiatry 2006;45(2): 192-202.
6. Biederman J, Faraone S. Attention deficit hyperactivity disorder. Lancet 2005; 366: 237-248.
7. Wilens TE, Kratochvil C, Newcorn JH, Gao H. Do children and adolescents with ADHD respond differently to Atomoxetine. J Am Acad Child Adolesc Psychiatry 2006;45(2): 149-57.
8. Goldman L, Genel M, Bezman R, Slanetz PJ. Diagnosis and treatment of attention-deficit/hyperactivity disorder in children and adolescents. J Am Med Assoc 1998; 279: 1100-7.
9. Biederman J, Spencer T, Wilens T. Evidence-based pharmacotherapy for attention-deficit hyperactivity disorder. Int J Neuropsychopharmacol 2004;7(1): 77-97.
10. Spencer T, Biederman J, Wilens T, Doyle R, Surman C, Prince J, et al. A large, double-blind, randomized clinical trial of methylphenidate in the treatment of adults with attention-deficit/hyperactivity disorder. Biol Psychiatry. 2005; 1; 57(5): 456-63.
11. Dulcan M. Practice parameters for the assessment and treatment of children, adolescents, and adults with attention-deficit/hyperactivity disorder. American Academy of Child and Adolescent Psychiatry. J Am Acad Child Adolesc Psychiatry 1997; 36(10 Suppl): 85S-121S.
12. Spencer T,Biederman J, Wilens T. Stimulant treatment of adult attention-deficit/hyperactivity disorder. Psychiatr Clin North Am. 2004; 27(2): 561-72.
13. Murray JB. Psychophysiological effects of methylphenidate (Ritalin). Psychol Rep 1987;61(1): 315-36.
14. Palumbo DR, Sallee FR, Pelham WE Jr, Bukstein OG, Daviss WB, McDermott MP. Clonidine for attention-deficit/ hyperactivity disorder: I. Efficacy and tolerability outcomes. J Am Acad Child Adolesc Psychiatry. 2008; 47(2): 180-8.
15. Barrickman LL, Perry PJ, Allen AJ, Kuperman S, Arndt SV, Herrmann KJ, et al. Bupropion versus methylphenidate in the treatment of attention-deficit hyperactivity disorder. J Am Acad Child Adolesc Psychiatry, 1995; 34(5): 649-57.
16. Cohn LM, Caliendo GC. Guanfacine use in children with attention deficit hyperactivity disorder. Ann Pharmacother. 1997; 31(7-8): 918-9.
17. Myronuk LD, Weiss M, Cotter L. Combined treatment with moclobemide and methylphenidate for comorbid major depression and adult attention-deficit/hyperactivity disorder. J Clin Psychopharmacol. 1996; 16(6): 468-9.
18. Mohammadi MR, Ghanizadeh A, Alaghband-Rad J, Tehranidoost M, Mesgarpour B, Soori H. Selegiline in comparison with methylphenidate in attention deficit hyperactivity disorder children and adolescents in a double-blind, randomized clinical trial. J Child Adolesc Psychopharmacol 2004;14(3): 418-25.
19. Akhondzadeh S, Tavakolian R, Davari-Ashtiani R, Arabgol F, Amini H. Selegiline in the treatment of attention deficit hyperactivity disorder in children: a double blind and randomized trial. Prog Neuropsychopharmacol Biol Psychiatry. 2003; 27(5): 841-5
20. Amiri S, Mohammadi MR, Mohammadi M, Nooroozinejad GH, Kahbazi M, Akhondzadeh S. Modafinil as a treatment for Attention-Deficit/ Hyperactivity Disorder in children and adolescents:
a double blind, randomized clinical trial. Prog Neuropsychopharmacol Biol Psychiatry. 2008; 32(1): 145-9.

21. Biederman J. Introduction: new developments in the treatment of attention-deficit/hyperactivity disorder. J Clin Psychiatry 2006; 67(8): 4-6.

22. Pi EH, Simpson GM. Cross-cultural psychopharmacology: a current clinical perspective. Psychiatr Serv. 2005; 56(1): 31-3.

23. Helton SC, Corwyn RF, Bonner MJ, Brown RT, Mulhern RK. Factor Analysis and Validity of the Conners Parent and Teacher Rating Scales in Childhood Cancer Survivors. J Pediatr Psychol 2006; 31(2): 200-8.

24. Leon AC, Shear MK, Klerman GL, Portera L, Rosenbaum JF, Goldenberg I. A comparison of symptom determinants of patient and clinician global ratings in patients with panic disorder and depression. J Clin Psychopharmacol 1993; 13(5): 327-31.

25. Gadow KD, Sprafkin J. The Symptom Inventories: An annotated bibliography. NY: Stony Brook, Checkmate Plus; 2001.

26. Gadow KD, Sprafkin J. Child Symptom Inventory 4: Screening and Norms Manual. NY: Checkmate Plus: Stony Brook; 2002.

27. Shaffer D, Gould MS, Brasic J, et al. A Children’s Global Assessment Scale (CGAS). Arch Gen Psychiatry 1983; 40: 1228-31.

28. Rey JM, Starling J, Wever C, Dossetor DR, Plapp JM. Inter-rater reliability of global assessment of functioning in a clinical setting. J Child Psychol Psychiatry 1995; 36(5): 787-92.

29. Forkmann T, Scherer A, Boecker M, PawelzikM, JostesR, iegfried Gauggel S. The Clinical Global Impression Scale and the influence of patient or staff perspective on outcome. BMC Psychiatr 2011; 11: 83.

30. Ulloa RE, Narvaez MR, Arroyo E, del Bosque J, de la Pena F. Validity of the Child Psychiatric Hospital Teacher Questionnaire for the assessment of ADHD. Teacher's version. Actas Esp Psiquiatr 2009; 37(3): 153-7.

31. Hale JB, How SK, Dewitt MB, Coury DL. Discriminant validity of the Conners’ scales for ADHD subtypes. Current Psychol: Develop Learning, Person, Soc 2001; 20: 231-249.

32. Ivis FJ, Adlaf EM. Prevalence of methylphenidate use among adolescents in Ontario. Can J Public Health 1999; 90(5): 309-12.

33. Romano E, Baillargeon RH, Wu HX, Robaey P, Tremblay RE. Prevalence of methylphenidate use and change over a two-year period: a nationwide study of 2- to 11-year-old Canadian children. J Pediatr 2002; 141(1): 71-5.

34. Jick H, Kaye JA, Black C. Incidence and prevalence of drug-treated attention deficit disorder among boys in the UK. Br J Gen Pract 2004; 54(502): 345-7.

35. Knellwolf AL, Deligne J, Chiarotti F, Auleley GR, Palmieri S, Blum Boisgard C, et al. Prevalence and patterns of methylphenidate use in French children and adolescents. Eur J Clin Pharmacol 2008; 64(3): 311-7.

36. Mohammadi MR, Akhondzadeh S, Khosrovan Mehr N, Mohammadi M, Mahintorabi S. Comparison of Stimdate with Ritalin in Children and Adolescents with Attention Deficit Hyperactivity Disorder: A Double-Blind, Randomized Clinical Trial. Iran J Psychiatry 2008; 4(31-35).

37. DuPaul GJ. Parent and Teacher Ratings of ADHD Symptoms: Psychometric Properties in a Community-Based Sample. J Clin Child Adolesc Psychol 1991; 20: 245-253.
درصد تخفیف نوروزی ویژه کارگاه‌ها و فیلم‌های آموزشی

اصول تنظیم قراردادها

پروپوزال نویسی

آموزش مهارت های کاربردی در تدوین و چاپ مقاله