

## Original Article

# The Effectiveness of the Pilot Implementation of Iran's Comprehensive Mental and Social Health Services (the SERAJ Program): A Controlled Community Trial

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### Abstract

**Objective:** A national program on providing comprehensive social and mental health services, entitled "SERAJ" was developed and piloted in three districts of Iran. The present study aimed to evaluate the effectiveness of SERAJ by conducting assessments before and after the implementation in the intervention and the control areas.

**Method:** This was a controlled community trial that was assessed by conducting repeated surveys in the intervention and the control areas. In total, 2952 and 2874 individuals were assessed in the intervention and the control areas, respectively. The change in prevalence of mental disorders (using the Composite International Diagnostic Interview; CIDI), service utilization, mental health literacy, happiness, and perceived social support were measured over 18 months in three districts of Osko, Bardsir, and Quchan as the intervention areas, which were compared with three matched districts as the control areas.

**Results:** No significant difference was found in the mean score of happiness between the intervention and the control areas throughout the study period. Most aspects of mental health literacy were improved in the intervention areas after implementing the intervention. The mean score of social support decreased after implementing the intervention in all areas. The prevalence of mental disorders in the intervention districts was significantly reduced after 18 months. The rate of using any mental health services after the intervention was not statistically different between the intervention and the control areas.

**Conclusion:** There was no significant change in some indicators in the intervention compared with the control areas. We suggest evaluating SERAJ's achievements and challenges in the three intervention districts before expanding the implementation of this pilot experience into other districts.

**Keywords:** *Community Trial; Mental Health; Mental Health Literacy; Pilot Evaluation*

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Access to the right to the highest attainable level of health is a constitutional right which makes governments and other players to improve the chances of all individuals to obtain good health (1). In this regard, health and education are the two least necessities for this. According to Iran's vision 2025, the country should improve to become developed state with the highest rank of economic, scientific, and technological status in the region (2).

Enjoying health, welfare, food security, social security, equal opportunities, etc, are also considered as part of this vision. The Iranian health system has many achievements in providing health services, specially for the poor.

However, following the Islamic Revolution of Iran in 1979, the fifth 5-year economical, social, and cultural plan (5th 5YDP:2011–2015) was developed based on the gathered evidence. They listed a variety of main challenges in functions of the existing health system including financing, stewardship, service provision, and resources generation.

According to the World Health Organization (WHO), "Mental health is defined as a state of well-being in which every individual realizes his/her potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community." (3) It is estimated that the global prevalence of mental disorders is 919 000 000 people, which constitutes 19% of the adult population (4). In this regard, the latest mental health survey in Iran (5) showed that the prevalence of mental disorders is 23.6%. Another recent Iranian study reported that in a scale from 1 to 5, the mean score of happiness, life satisfaction, self-perceived health, and quality of life was 3.28, 3.45, 3.66, and 3.56, respectively, which means that the majority of Iranians assess their perception of happiness, life satisfaction, health, and quality of life as 'good' or 'moderate' (6). People with a lower level of Mental Health Literacy (MHL) rather than a higher level of MHL use prevention services less and they refer to clinics and seek social support only when they are sick (7). Studies show that health costs are high in people with a lower level of MHL (8). Furthermore, the low level of mental health can limit optimal health service utilization (8). However, the only study that has been conducted regarding the assessment of health literacy in Iran did not address the MHL condition (9).

To improve mental health, the constitution for Provincial Mental Health Services is integrated into the Comprehensive and Universal Health Service System, according to the fifth 5-year Development Plan Act. Based on the Perspective Document of "Iran in 2025", the general health policies of the Supreme Leader of Iran (especially parables 3 and 8), and Section 6 of the General Population Policies, Article 32, Article 37, and Article 38 of the fifth 5-year Development Plan Act of

the Health Transformation Map was approved by the cabinet. Thus, Iran's comprehensive mental health promotion program that integrated mental health services into the comprehensive health networks can be considered as an effort to improve mental and social health indicators and their associated risk factors (2).

Based on the above problems and the credible evidence that could be presented to decision-makers, a national program on providing comprehensive social and mental health services entitled "SERAJ" was implemented and piloted in Iran. The present study aimed to evaluate SERAJ by assessing its impact on social and mental health indicators, including the prevalence and incidence of mental and social disorders, the social issues, and the associated risk factors.

## Materials and Methods

We used the data on a national program on providing comprehensive social and mental health services, entitled "SERAJ" and here we reported its evaluation and effect on the mental health of Iranian people.

### Participants and Data Collection

A total of 2952 people were selected by a two-stage cluster sampling method from six districts, 1528 from the case areas, and 1424 from control areas. In each district, 20 cluster heads were chosen using individuals' ZIP code; in each cluster, 10 households (older than 15-year-old regardless of their gender) were randomly selected. Each cluster consisted of 30 individuals.

A total of 1421 individuals from intervention areas and 1426 from case areas (2847 people in total) who remained in the study and indicated an interest in participating were selected for the community trial.

Using data from SERAJ, outcomes were compared before and after the intervention. Bardsir district (Kerman Province), Osko district (East Azarbaijan Province), and Quchan district (Razavi Khorasan Province) were selected as the case areas and Baft district (Kerman Province), Dargaz district (Razavi Khorasan Province), and Azarshahr (East Azerbaijan Province) as the control areas.

We randomly selected the participants by the electoral roll and used the SELECT CASES random selection option in SPSS. The number selected was set at individuals' ZIP code in both case and district areas. Then we imported the resulting list of names and addresses into Excel. In the next step 0 or 1 was randomly assigned to each record by using the following function = 0+ (RAND () < 0.5). Participants assigned a value of 1 to the case and 0 to the control group. Randomization was done by a statistician. The baseline questionnaires were handed to individuals when referring to the health centers in both case and control areas. The demographic information of study population including age, gender, ethnicity, number of children, marital status, insurance status and level of education, were collected through questionnaires.

### *Outcomes and Outcome Measures*

The outcome of the study was the level of happiness, service utilization, MHL, and perceived social support. The study population was handed a pretest questionnaire, including the Composite International Diagnostic Interview (CIDI) and questions asking about their service utilization, MHL, happiness, and perceived social support. World Health Organization (WHO) developed a structured interview so called the CIDI, so that trained interviewers who may be lay persons could use it. CIDI, as a tool, for most diagnoses in different settings and languages, has high inter-rater and test-retest reliability as well as high validity (10, 11). The CIDI 2.1 was previously translated to Persian and has been validated (12). The Persian version of CIDI has shown adequate psychometric properties, but psychotic disorders are the exception since they are difficult to evaluate in a structured interview. Also, in a pilot study in a sample from general population, we observed good interrater reliability of diagnoses made by the Persian translation of the CIDI 2.1 (13).

The level of happiness was measured with a Single-Item Scale and compared by responding to the question "generally I am happy" with very high, high, moderate, low, very low, and no difference. Scores were assigned as no difference = 0, very low = 1; low = 2; moderate = 3; high = 4; very high = 5.

MHL refers to an individuals' knowledge and beliefs about mental disorders that assist their management, recognition and prevention (14). We evaluated MHL in participants by using a questionnaire consisted of 12 questions. "Most people with mental disorders want to have a job or an income," "If a friend of mine has a mental disorder, I'll advise him/ her to go to an appropriate center for seeking treatment or help." "Medication can be an effective treatment for people with mental disorders," "Psychotherapy can be an effective treatment for people with mental disorders," "People with mental disorders can reach to full recovery," "Most people with mental disorders go visiting a doctor, counselor or psychologist." "Depression is a mental disorder," "Stress is a mental disorder," "Schizophrenia is a mental disorder," "Bipolar disorder is a mental disorder," "Addiction is a mental disorder," "Greif is a mental disorder." Scores were assigned as strongly agree = 5, agree = 4, don't know = 3, don't comment = 2, strongly disagree = 1, and disagree = 0. Scores were summed and calculated before and after the intervention for control and case districts, ranging from 0-60. A questionnaire containing 12 categorical questions (yes/no) was used to measure perceived social support. Scores we measured as yes = 1, no = 0.

We sent out the baseline questionnaires to the participants and provided them the interventions on an on-going basis as eligible questionnaires were returned. The before survey was conducted during 2015-2016. The interventions were implemented in case areas for 18

months and are still ongoing. Similar questionnaires were used for evaluating its effectiveness in 18 months when the coverage of the population for comprehensive mental and social services reached 60%. The scores were calculated and compared in the next step. Participants could not be blinded as they were receiving an intervention, but they were blind to the fact that a comparison intervention was also being evaluated.

### *Statistical Analysis*

Values were presented as frequency (number and percentage), mean  $\pm$  standard deviation (SD), and median (interquartile range, IQR), as appropriate. Fisher exact test and chi-square tests were used for  $2 \times 2$  comparisons of categorical variables. To compare numerical variables, the Mann-Whitney U test and Kruskal-Wallis test for non-parametric data and t-tests, and one-way ANOVA) were used for parametric data. Shapiro-Wilks test was used to check the assumption of normality for a variable and the parametric or nonparametric test was done according to the normality assumption. Statistical analyses were performed using the SPSS software package, version 22 (SPSS Inc, Chicago, IL, USA). A P value  $< 0.05$  was considered statistically significant.

## **Results**

Before the intervention, the number of participants was 2952, of whom 1528 were in the case districts and 1424 in the control districts. The number of participants after the intervention was 2847, of whom 1421 were in the case districts and 1426 were in the control districts.

### *Demographic Characteristics*

Of 1365 (46.2%) males and 1587 (53.8%), females participated in the before-study survey, while 1293 (45.4%) males and 1554 (54.6%) females participated in the after-study survey. The mean age of the participants before and after the intervention was ( $36.9 \pm 13.7$ ) and ( $38.5 \pm 13.9$ ) years, respectively. When dividing participants into five age groups (<24, 25-24, 25-44, 45-54, >55 years old), 689 (23.7%) of participants younger than 24 years and 620 (21.8%) participants aged 45 to 54 years constituted the largest population before and after the intervention, respectively. Participants older than 55 years had the lowest participation in both before and after-study surveys.

Also, 65.5% and 71.4% of the study population were married before and after the intervention, respectively. The mean number of children before and after the intervention was  $1.4 \pm 2.7$  and  $1.4 \pm 2.7$ , respectively. Most households, 669 (36%) and 691 (35.9%) reported two children in the household before and after the intervention, respectively.

Most of the participants' ethnicity was Fars (47% of the participants before and 49.5% of the participants after the intervention) and Turks (42.7% of the participants before and 40.5% after the intervention). Participants with Gilaki, Mazzini, and Lor were the next most prevalent ethnicities reported, respectively. The participants' duration of education before and after the intervention was  $10.5 \pm 4.1$  and  $10.8 \pm 4$  (mean  $\pm$  SD) years. The percentage of participants with health insurance coverage before and after the intervention was 88% (n = 2599) and 88.7% (n = 2489), respectively.

**Happiness**

Results show that 69% of the participants in the case districts and 64.9% in the control districts reported having high and very high happiness (score  $\geq 4$ ) before the intervention. However, after the intervention, this rate decreased to 63.6% and 65.3%, respectively.

The mean score of happiness before intervention in Osko and Baft districts were significantly higher than other case or control districts ( $3.6 \pm 0.93$  and  $3.90 \pm 0.87$ , respectively;  $P < 0.000$ ). Moreover, there was no significant change in mean happiness scores between case and control districts before the intervention ( $3.77 \pm 0.94$  and  $3.75 \pm 0.92$ , respectively;  $P = 0.667$ ). Also, after the intervention, no significant difference was found in the mean happiness score between case and

control districts ( $3.64 \pm 0.98$  and  $3.66 \pm 1.06$ , respectively;  $P = 0.6$ ). The mean  $\pm$  SD happiness score in Baft district was significantly higher than in other cases or control districts after the intervention ( $3.76 \pm 0.94$ ;  $P = 0.03$ ).

Comparing mean  $\pm$  SD happiness score before and after implementing the intervention, happiness significantly decreased in the case districts ( $3.77 \pm 0.94$  vs  $3.64 \pm 0.98$ ;  $P < 0.000$ ) as well as control districts ( $3.75 \pm 0.92$  vs  $3.66 \pm 1.06$ ;  $P = 0.016$ ) (Table1).

**Mental Health Literacy**

In most aspects of MHL, the mean score of respondents improved after the intervention in the case districts. The mean score of respondents was lowest for questions evaluating participants' knowledge of schizophrenia and bipolar disorders both before and after the intervention. However, this score increased after intervention in the case districts.

As shown in Figure 1 and Table 1, the mean score of MHL after intervention increased in all case districts ( $38.94 \pm 6.22$  vs  $40.68 \pm 6.22$ ,  $P < 0.000$ ) but decreased in control districts ( $40.87 \pm 6.20$  vs  $39.88 \pm 6.19$ ;  $P < 0.000$ ).

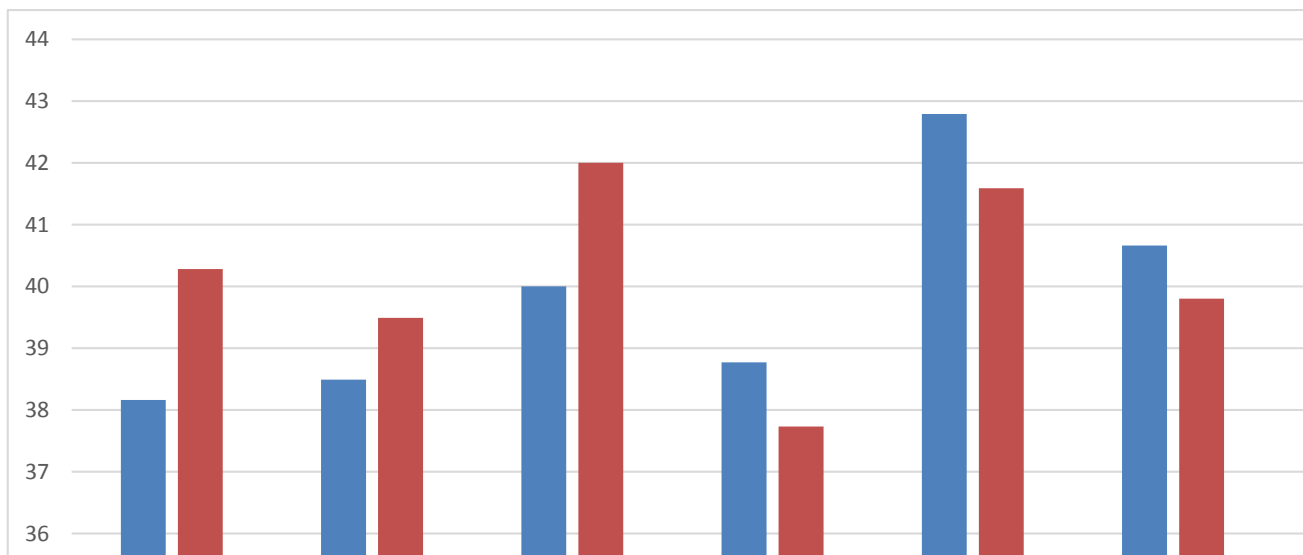
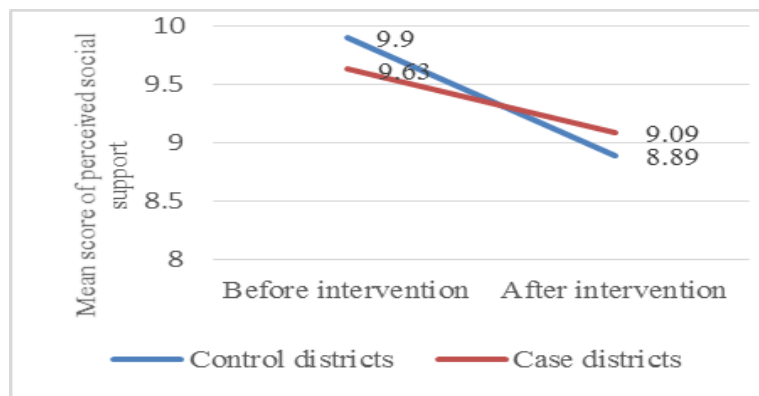


Figure 1. Comparison of Mental Health Literacy Scores before and after Intervention by Districts

**Social Support**

The mean score of perceived social support significantly decreased in both case and control districts (Table1). The mean score of perceived social support was higher

in the control and case districts before and after the intervention respectively. Moreover, the rate of decline in the mean score of perceived social support was slower in the case than control districts (Figure 2).



**Figure 2. Comparison of the Mean Score of Perceived Social Support (Ranged 0 to 12) between Case and Control Districts, before and after the Intervention**

### **Prevalence of Mental Disorders**

As shown in Figure 3, the prevalence of mental disorders decreased in the case districts from 27.1 (95% CI: 24.8-29.5) to 20.9 (95% CI:18.8-23.1) after the intervention ( $p < 0.000$ ). The prevalence of mental disorders also decreased in the control districts from 19.1 (95% CI:17-21.2) to 17.9 (95% CI: 15.9-20), but this difference was not statistically significant ( $p = 0.419$ ). The prevalence of mental disorders in Quchan district decreased from 29.9 (95% CI:25.5-34.5) to 13.5 (95% CI:10.4-17.1) and in Bardsir it decreased from 33.4 (95% CI:29.4-37.6) to 26.5 (95% CI:22.7-30.5) and in Dargez, as a control district, it decreased from 26.5 (95% CI:22.5 -30.8) to 18.5 (95% CI:22.9-14.9), ( $p = 0.015$ ,  $p = 0.004$ ,  $p = 0.000$ , respectively). No significant change was found in the prevalence of mental disorders in other districts when comparing before and after the intervention (Table1).

The prevalence of depression in the case districts decreased (16.5 [95% CI:18.4 - 14.6] vs 15 [95% CI:16.9 - 13.1],  $P = 0.252$ ) after the intervention, while a slight increase was observed in the control districts (11.2 [95% CI:9.6 - 13] vs 11.5[95% CI:9.9-13.3],  $P = 0.824$ ); however, none of these changes were significant.

### **Mental Health Service Utilization**

As shown in Figure 4, mental health service utilization by the general population after the intervention was significantly higher in the case (19.5) than control (13.1) districts ( $p < 0.000$ ). The most common cause of referral for mental health services before and after the intervention was depression, anxiety, obsession, psychosis, sleep disorders, headache, and other mental disorders. The percentage of patient referral to a therapist or counselor in the case districts significantly decreased (from 25.1 to 19.5,  $p < 0.000$ ). However, no significant change was observed in control districts ( $p = 0.973$ ).

Mental health service utilization by patients with mental disorders, regardless of the cause of referral, was

significantly higher in the case districts (50.8) than in the control districts (41.4) ( $p = 0.05$ ). However, this difference was not significant after the intervention (48.8 in control districts vs 43.1 in control districts,  $p = 0.19$ ). The most common cause of mental health service utilization by patients with mental disorders was depression, anxiety, anger, or sleep problems before and after the intervention.

No significant change was observed in mental health referral or counseling within the last 12 months in case or control districts (Table1). Inpatient mental health service utilization before and after the intervention was (0.9% vs 1%) in case districts and (0.6% vs 0.4%) in control districts, respectively. This shows that in the control districts the use of inpatient services increased while in the control districts the percentage of people using the inpatient services decreased, but none of these changes were significant (Figure 5).

In general, 15 patients before the intervention and 18 patients after the intervention used mental health services. In the case districts, the percentage of people using inpatient services increased after the intervention (from 2% to 4.1%) but in control districts, the percentage of people using inpatient services decreased (from 2.6 to 2.4), but none of these changes were significant.

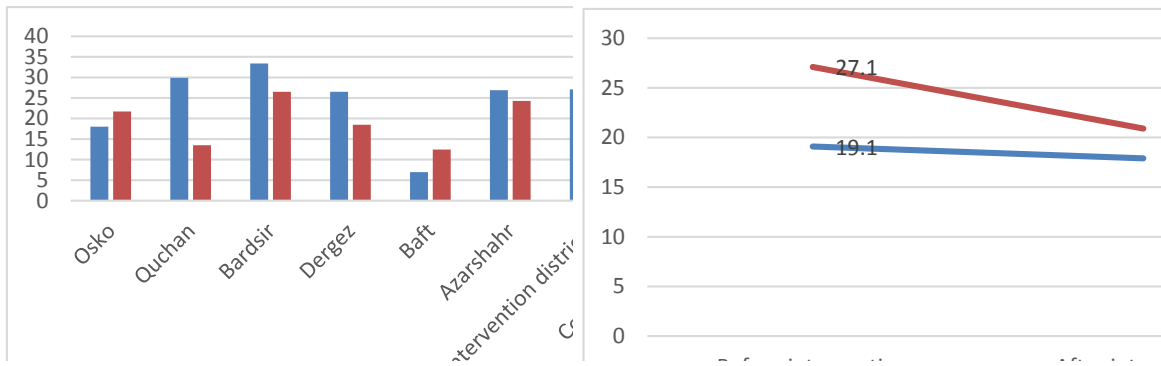


Figure 3. Comparison of the Prevalence of Mental Disorders in Case and Control Areas before and after the Intervention by each District (on the left) and by Case and Control Districts (on the Right)

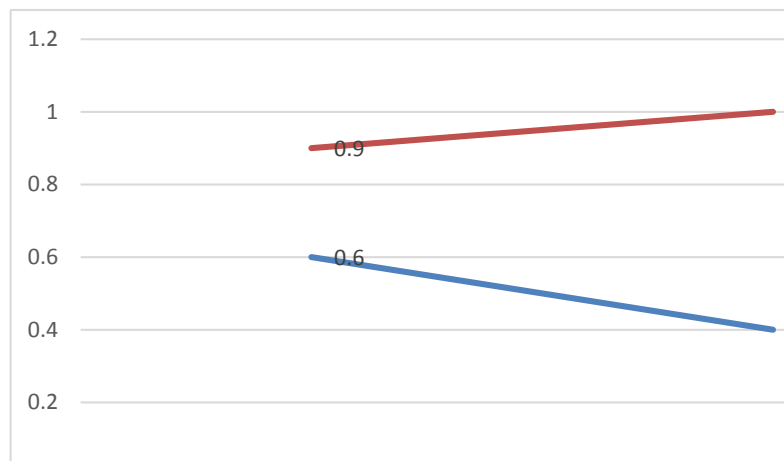


Figure 4. Percentage of Mental Health Service Utilization before and after Intervention in both Case and Control Districts by the General Population

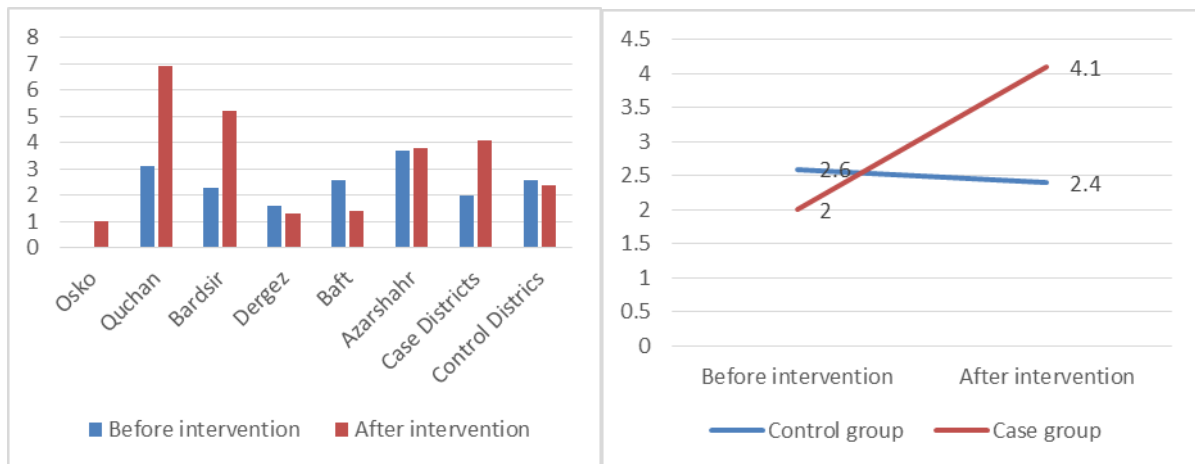


Figure 5. Percentage of Mental Health Service Utilization before and after Intervention in both Case and Control Districts by Patients with Mental Disorders

**Table 1. Comparison of Happiness, Mental Health Literacy, Social Support, Prevalence of Mental Disorders, Mental Health Service Utilization in Both Case and Control Districts before and after the Intervention**

Indices	Before Intervention		After Intervention		P value**	P-value*
	Control (M±SD)	Case (M±SD)	Control (M±SD)	Case (M±SD)		
Happiness	3.75±0.92	3.77±0.94	3.66±1.06	3.64±0.98		<0.000
Mental health literacy	40.87±6.20	38.94±6.22	39.88±6.19	40.68±6.62	<0.000	<0.000
Social support	9.90±2.66	9.63±2.68	8.89±2.45	9.09±2.27	<0.000	<0.000
Prevalence of mental disorders	19.1±2.1	27.1±2.4	17.9±2.1	20.9±2.2	0.419	<0.000
Mental health service utilization	41.4	50.8	43.1	48.8		0.612

\*P-value is provided for comparing case districts before and after implementing *SERAJ*.

\*\*P-value is provided for comparing control districts before and after implementing *SERAJ*.

## Discussion

Several studies revealed the importance of implementing comprehensive, innovative strategies on social and mental health to take the advantage of opportunities and meet the challenges faced in the developing countries (15, 16). In this regard, a national plan on providing comprehensive social and mental health services was designed and piloted in three districts of Iran under the name of *SERAJ*.

We compared happiness, MHL, social support, the prevalence of mental disorders, and mental health service utilization in both case and control districts before and after the implementation of *SERAJ*.

Poor MHL could be an obstacle to providing treatment for those in need and thus studies indicate that improving MHL is of vital importance since. Moreover, improving MHL is crucial in low- and middle-income countries, where they suffer from lack of sufficient mental health services (15, 17).

Having evaluated the results of our study, we found a significant and positive change in MHL and the prevalence of mental disorders during the 18 months of intervention in the three districts studied. It does not necessarily mean that the prevalence of mental disorders increased in Iran; however, it could be explained by the fact that improvement in the provision of social and mental health screenings throughout the case districts led to an increase in the number of diagnosed patients; as some patients had not referred to centers before the implementation of the intervention due to economic, social, or cultural reasons or lack of access to such centers and thus remained undiagnosed. This problem has not only been observed in Iran but also has been seen in other developing countries such issues and recommended taking actions after understanding the sociocultural basis of their country to develop effective programs (18, 19).

Our results showed that mental health service utilization among the general population was significantly higher in the case than control districts before and after the

intervention, but, unexpectedly, a significant decline in mental health service utilization was observed in the case districts after the intervention, unlike control district, where no significant change was found. On the other hand, mental health service utilization by patients with mental disorders did not change after the intervention. Hospitalization services and perceived social support services did not change significantly for this group. Happiness decreased significantly in both intervention and control districts after the implementation of the *SERAJ*.

The insignificance of the changes in some of the above indices may be due to several reasons: The survey was conducted after the intervention when the mean coverage for mental health screening was only 55% in all three case districts. Therefore, several individuals who had not received the services before conducting the survey were included in this study (selection bias). Moreover, the study population for surveys conducted before and after the intervention was not matched. In the control districts, the outpatient mental health service utilization was declined, which could be explained by the fact that after implementing this project and establishing new centers; the services were provided in specialized centers in the districts, where inpatient services are provided; poor financial capability of patients could be another reason.

Although outpatient services decreased after the intervention, according to the registry data collected from the three control districts, it was shown that a total of 305 patients in Osko and 146 patients with severe psychiatric disorders (bipolar, psychosis, and severe depression) were covered by the CMHCs. Furthermore, the Health Transformation Plan (20) has been implemented equally in all districts in the country during 2016-2017 (which was during the pilot implementation) and may be one of the other factors contributing to the lack of significant changes in indicators of this study. The difference between the mental health package in the Health Transformation Plan (HTP) and the basic

package of SERAJ implemented in the three districts was by the use of a mental health expert per 15 000 population, the oversight of the practice of GPs by the district's psychiatrist and mental health monitoring in SERAJ while due to lack of clinical psychologists or the limited recruitment budget, only one mental health expert has been dedicated to every 30 000 to 50 000 people in the HTP .

On the one hand, an increase in hospitalization was expected due to hospital capability improvement; the greater the number of hospitals, the more available the services. On the other hand, with the provision of post-discharge care, a decline in hospitalization is expected (so as 400 home visits in two remote districts of Osko and Bardsir have been reported). This is probably the reason that overall hospitalization services did not have significant changes during the intervention .

The community action package on the SERAJ began with an 8-month delay and a total of 12 months service provision, which may justify the lack of significant changes in social support given the late appearance of the city's environmental changes managed by the local government .

The decline in happiness has generally occurred in all districts, indicating the negative impact of national policies on all districts that need to be addressed. the political upheaval in Iran, the United States' withdrawal from the Joint Comprehensive Plan of Action (JCPOA, aka in Iran as BARJAM), the impact of international sanctions on various Iranian strata and social groups, as well as the country's low governance score in 2017 could be the possible reasons.

### Limitation

One limitation of this study was that the financial protection of patients was not analyzed. The cost of mental health services provided in the basic package, specialized package, and social referrals were free of charge for the insurance companies except for the insurance fee which the patient had to pay. However, financial studies are crucial for expanding this pilot study. The main limitation of our study was the lack of accurate regional maps and the absence of municipal and marginal areas of the districts.

### Conclusion

There was no significant change in some indicators in the intervention compared with the control areas. We recommend qualitative evaluation of project achievements and challenges, with the participation of project stakeholders in all three districts, and we advocate for officials regarding the results of this study. Service providers for basic packages (health centers), specialized packages (psychiatrist and CMHC team members), and community action packages (governor, governor council members, head of People's Participation House, social worker) are the stakeholders whose information should be obtained through semi-

structured interviews and FGDs. We suggest 1) expanding SERAJ into districts with different socioeconomic characteristics to Quchan, Bardsir, and; Osko 2) institutionalizing other models of service provision such as a family medicine plan into SERAJ, and 3) the existence of sovereignty patterns, such as the dominance of the mayor's decisions over the local governor.

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### Conflict of Interest

None.

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