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**CLINICAL REVIEW**

# Schizophrenia Rehabilitation Interventions to Promote Recovery in Palestine: Literature Review

Zareefa Shaabna[1*] and Mohammad Marie[2]

[1]*Department of Community Mental Health Nursing, AN-Najah National University, Nablus, Palestine*
[2]*Department of Medicine and Health Sciences, AN-Najah National University, Nablus, Palestine*

Correspondence should be addressed to Zareefa Shaabna, Department of Community Mental Health Nursing, AN-Najah National University, Nablus, Palestine

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## ABSTRACT

### BACKGROUND

Schizophrenia is a serious mental illness and its considered one of the top 15 leading causes of disability worldwide. In Palestine, the number of patients diagnosed with schizophrenia reached 32,559 patients in 2019. However, in Palestine there is a near absence of occupational and rehabilitation interventions in the community to the patients diagnosed with mental disorders. Therefore, since rehabilitation along with antipsychotics are considered the cornerstone in the management and recovery from schizophrenia, this review aims to overview the available literature on rehabilitation intervention and services in Palestine and Worldwide that are used to promote recovery among these patients, Moreover, this paper will act as a guide in the future for policy makers whom investing in rehabilitation interventions for mental illnesses in Palestine.

### METHODS

PubMed, Science Direct, Scopus, Google Scholar, CINAHL, Semantic Scholar, MEDLINE, APA PsycNet, Cochrane, Springer link and Elsevier.

### RESULTS

Rehabilitation Interventions such as: Exercise, Vocational rehabilitation, Islamic religion and Quran, Family role, Social skills programs, Community-Based Psychosocial Interventions as (Patient and family psychoeducation; Crisis interventions; Home visits; Stress management; Self-help and Support groups), Community based rehabilitation services to improve the quality of life, and music therapy played an important role in the process of the recovery and improving the quality of life in patients with schizophrenia.

**CONCLUSION**

Palestine is in a strong need of these rehabilitation interventions to be implemented. However, there is almost impossible to implement these rehabilitation interventions without increasing the amount of budget of the ministry of health on the mental health services. In addition to, increasing the number of specialists and mental health nurses, investing in mental health services, training the staff, encouraging the multidisciplinary team working. Finally, ending up the occupation in Palestine and enable the decisions of the legislative council to implement the legislations that encourages the integration of these patients in the labour market.

## KEYWORD

Schizophrenia; Rehabilitation; Interventions; Palestine

## ABBREVIATION

OPT: Occupied Palestinian Territory; SMI: Serious Mental Illness; SSP: Social Skills Programs; CBR: Community Based Rehabilitation; QOL: Quality of Life; PORT: Patient Outcomes Research Team; MOH: Ministry of Health; LMICs: Low and Middle-Income Countries; HIC: High Income Countries

## INTRODUCTION

Mental health disorders are considered one of the largest and least acknowledged health problems in the occupied Palestinian territory (OPT). Around a third of Palestinians are in need of mental health interventions, yet mental health services are among the most under-resourced areas of health provision [1].

As throughout most of the Middle East countries, Palestinian culture has its own traditional explanations for mental disorders. The common belief is that mental illness is the result of possession by supernatural forces [2]. This possession has religious roots and cannot be explained in psychological or psychiatric terms. In many developing countries, Palestine included, mental disorders are often a source of fear [3]. Because mental illness carries a stigma, patients tend to present emotional or psychological distress in the form of physical symptoms such as headaches and back pain [4]. This suggests that the extent of mental illness is being significantly under-reported.

Schizophrenia is a serious mental illness that affects approximately one percent of the various populations throughout the world [5]. Schizophrenia is characterized by delusions, hallucinations, disorganized speech, behavior, and other symptoms that cause social or occupational dysfunction. For the diagnosis, symptoms must have been present for at least 6 months and include at least 1 month of active symptoms (American Psychiatric Association, 2018). The DSM-5 raises the symptom threshold, requiring that an individual exhibit at least two of the specified symptoms. People with schizophrenia may seem like they have lost touch with reality, which causes significant distress for the individual, their family members, and friends. If left untreated, the symptoms of schizophrenia can be persistent and disabling. However, effective treatments are available. When delivered in a timely, coordinated, and sustained manner, treatment can help affected individuals to engage in school or work, achieve independence, and enjoy personal relationships (National Institute of Mental Health).

Globally, Schizophrenia is considered one of the top 15 leading causes of disability worldwide [6]. The number of people with schizophrenia around the world can be estimated at about 29 million, of whom 20 million live in

developing or least developed countries and this number will continue to rise with population ageing and growth [7]. According to the Palestinian Health Information Center for 2016, the incidence rates for the newly cases diagnosed with schizophrenia was 15.6 per 100,000 population, the data also revealed that schizophrenia was the third-highest incidence in mental disorders in Palestine. In comparison, the Palestinian Health Information Center for 2017 showed an increasing in the incidence rate among these patients reaching 21.4 per 100,000 making schizophrenia the second- highest incidence in mental disorders with 29,980 patients after Neurotic disorders. In 2018, the Heath Information Centre reported an increasing in the number of patients to 31,645 patients, and in 2019 the number increased to reach 32,559 patients. The statistics certainly confirms that there is an increasing number of patients suffering from schizophrenia in Palestine.

According to the Bulletin of the World Health Organization, A survey in 50 low- and middle-income countries unfortunately revealed that more than 69% of people with schizophrenia are not receiving appropriate care. Ninety per cent of people with untreated schizophrenia live in low- and middle- income countries, and lack of access to mental health services is an important issue. A recent literature review published in Palestine by Marie et al. [8] revealed that lacking mental health services was a major barrier to these patients. These barriers were the inconsistent availability of medications, absence of multidisciplinary teamwork, insufficient specialists, fragmented mental health system, and others as lacking awareness about mental illness and stigma. Moreover, in Palestine there is a near absence of occupational and rehabilitation interventions in community mental health services to the patients diagnosed with mental disorders as schizophrenia due to the conspicuous lack of training and understaffed mental health nurses [9]. The mental health services provided in Palestine is merely limited to support people with brain-damaged and severely handicapped children, psychological support and counselling services for children and young people, and the support for the political prisoners [1].

Therefore, the aim of this paper is to overview the available literature on the rehabilitation intervention and services in Palestine and worldwide that are used to promote recovery among patients with schizophrenia.

## BACKGROUND

Meeting the need for mental health care for the Palestinian population remains an ongoing struggle [10]. Palestinians are conspicuously at a higher risk for developing mental disorders due to their chronic exposure to political violence, prolonged displacement, and insecurity. In addition, the limited professional, educational, and financial opportunities that are linked to the prolonged conflicts and instability in the region [11]. For instance, in 2006, the Palestinian government experienced an acute lack of international funds and financial support. As a result, the health system was affected negatively; access to medicines and basic medical supplies sharply declined, and money was not available to pay salaries [12].

These vulnerabilities were compounded by the limited availability of the quality of mental health providers, inconsistent mental health services, and the stigma associated with seeking mental health care [13]. Services in Palestine have suffered through an overload of demand, lack of up-to-date medications and an ineffective management structure inside the community centers. Some mental health teams have been unable to share effectively in treatment plans or provide high quality care [14]. Moreover, there is a lack of effective programs in fighting the stigma toward mental illness. There is lack of up-to-date training or continuous education,

interventions, and research and there is a lack integration or connections between the local mental health professionals and their international colleagues [13]. There is a lack of integration between primary health care teams and community mental health services [10].

Another major barrier to implementing an effective mental health service is budget. According to the World Health Organization (WHO) and Ministry of Health, Community Mental Health has not been a priority in the financial budget of the Ministry of Health and is under-resourced [15]. For example, the budget for mental health services consisted of 2% of the whole budget of the Ministry of Health; and 73% of the 2% is spent on the psychiatric hospital. A lack of finances, management structure and human resources inhibited the quality of mental health services [16].

Overall, mental health services have been mostly underdeveloped, under resourced, under researched and under supported [17]. The mental health system has been affected negatively by the political conflict and this is thought to increase the challenges facing health workers in their routinely bases.

## METHODOLOGY

The literature search was made within the custom range 2010-2021 through the following electronic databases: PubMed, Science Direct, Scopus, Google Scholar, CINAHL, Semantic Scholar, MEDLINE, APA PsycNet, Cochrane, Springer link and Elsevier from the 14$^{th}$ of March - 20$^{th}$ of March 2021. The following keywords were used: Schizophrenia AND Rehabilitation AND Palestine, Schizophrenia AND Rehabilitation Needs AND Palestine, Schizophrenia AND Rehabilitation Interventions, "Schizophrenia AND Rehabilitation", "Schizophrenia AND Needs", "Schizophrenia and Recovery". These keywords were additionally used to search in the Arabic language. The total number of research hits that was found using the search strategy was mentioned in the review matrix. 29 publications remained after duplicates, irrelevant and excluded articles were removed. Other papers, which did not appear while searching in the electronic database were obtained via examination of reference lists of published papers. After reviewing in depth of these publications and obtaining necessary data a total of 15 resources remained directly related to this study topic; 7 Systematic reviews and Meta-analysis; 2 RCT's; 1 Quasi experimental study; 1 Literature review study; 3 Descriptive quantitative; and a Published Guide by The National Institute for Health and Care Excellence. However, one study that discussed motivational interviewing as a rehabilitation intervention was excluded because there was no significance in using this rehabilitation in improving the outcomes among patients.

### *Inclusion and Exclusion Criteria*

Studies were considered if they discussed any rehabilitation intervention or services that support the recovery process or improving the quality of life among patients with schizophrenia. Studies were excluded if the intervention did not provide any encouraging outcome in the process of the recovery.

## RESULTS

### *Exercise as a Rehabilitation Intervention*

It is now well established that people with serious mental illness (SMI), including schizophrenia, have excess morbidity and mortality leading to a reduced lifespan of 20 years - 25 years compared with the rest of the population [18,19]. The increased mortality is largely attributable to physical illness, including metabolic

abnormalities and cardiovascular disease, rather than factors that are directly associated with psychiatric illness such as suicide or homicide.

The rates of obesity and diabetes in patients with schizophrenia are higher than the general population [20]. Obesity is reported in approximately 50% patients, metabolic syndrome is reported in up to 40%, glucose intolerance in up to 25% and diabetes in up to 15% patients with schizophrenia [21]. The cause for the increased prevalence of these conditions is multifactorial. Antipsychotics, a cornerstone of treatment in people with schizophrenia, cause weight gain, glucose intolerance and other metabolic complications. Second generation antipsychotics, notably clozapine and olanzapine, are associated with a 5-fold increase in metabolic syndrome after three years of treatment [22]. Patients with schizophrenia are known to have unhealthy diets and inadequate physical activity due to lower socioeconomic status, lower educational level, and sub-optimal living situations. Symptoms of schizophrenia such as low motivation, apathy and cognitive deficits also could play a role in preventing access to high quality health care [23]. This confirms on study conducted by Ali et al. [24] which investigated the lifestyle parameters of patients with schizophrenia in Palestine and found that only 82 from 250 patient (32.8%) had an average BMI value (60 males and 13 females), and the number of patients suffering from overweight, and obesity was high (67.2%), and the average of waist circumference for most of these patients was abnormal (97.8 ± 13.4). Another study by Sweileh et al. [25] aimed to assess the prevalence of metabolic syndrome among patients with schizophrenia in Palestine. Results found that 109 of 250 (43.6%) of patients met the criteria of having metabolic syndrome; 39% in males and 55.9% in female patients. Among males, elevated levels of triglyceride were the most common metabolic component compared to females who have abdominal obesity as a common metabolic component. This study also revealed by using the univariate analysis that metabolic syndrome was significantly higher with older age, female gender, longer duration of illness, abdominal obesity, smoking, higher systolic and diastolic blood pressure, high triglycerides, low HDL-C, and fasting plasma glucose.

There are therefore two pressing issues in the management of schizophrenia: The need to develop feasible interventions for negative symptoms and cognitive dysfunction, and the need to reduce physical health inequalities. Exercise is one possible candidate that could meet both needs. For instance, exercise can reduce symptoms in clinical depression and improve cognitive functioning in neurological disorders. A systematic review and meta-analysis were performed by Firth et al. [26] to identify all studies that examined the physical or mental effects of exercise interventions in non-affective psychotic disorders. The results of the review were based on the summary of the 20 included studies which concluded that Exercise interventions had no significant effect on body mass index however it can improve physical fitness and other cardiometabolic risk factors. Psychiatric symptoms were found to be significantly reduced by interventions using around 90 minutes of moderate-to-vigorous exercise per week (standardized mean difference: 0.72, 95% confidence interval -1.14 to -0.29). This amount of exercise was also reported to significantly improve functioning, co-morbid disorders and neurocognition. Another systematic review and meta-analysis were performed by Firth et al. [27] to investigate the cognitive outcomes of exercise interventions in schizophrenia. The conclusion of this study was based on 10 eligible trials with cognitive outcome data for 385 patients with schizophrenia. The study concluded that Exercise significantly improved global cognition ($g = 0.33$, 95% CI = 0.13-0.53, $P = 0.001$). The effect size in the 7 studies which were randomized controlled trials was $g = 0.43$ ($P<0.001$). Meta-regression analyses indicated that greater amounts of exercise are

associated with larger improvements in global cognition (β = 0.005, P = 0.065). Exercise significantly improved the cognitive domains of working memory, social cognition, and attention/vigilance.

To conclude, the two systematic reviews and meta-analysis studies highlighted the importance of exercise as rehabilitation intervention among patients with schizophrenia in improving physical fitness, reducing cardiometabolic risk factors, improving functioning, cognitive outcomes including memory, social cognition, and attention.

***Vocational Rehabilitation Intervention***

Employment is an important part of recovery for individuals with schizophrenia [28]. and is positively associated with higher quality-of-life [29,30]. Despite this, international reviews have found employment rates between 6% - 39% [31,32]. The corresponding rate in Norway is 10% [33], and individuals who receive disability benefits rarely transfer into employment [34]. The high unemployment rates generate a significant burden both for the individual, their families [35], and for society at large, with indirect costs of unemployment accounting for 45% of the total costs associated with schizophrenia [33]. It should, therefore, be of great interest to decision-makers and service providers to develop interventions that can help individuals with schizophrenia obtain employment and identify factors that affect the likelihood of successful employment outcome.

The barriers to employment for individuals with schizophrenia have been studied with somewhat inconclusive results. One review emphasized that limited access to supported employment services and fragmented health and disability policies were the main barriers to employment [36], while another review of 62 relevant studies concluded that neurocognition, negative symptoms, young age, education, and work history were also significant predictors of competitive employment outcome [37]. An international study of 1379 patients with schizophrenia found that persistent psychotic symptoms (negative more than positive) were associated with poor functional outcome [38]. In Palestine, several studies revealed lower employment rates among these patients. A study by Ali et al. [24] found that among 250 patients with schizophrenia in Palestine, 197 (78.80%) patients were without a job, and the number of working patients was only 53 (21.2%). Another study by Kremer et al. [39], investigated the clinical characteristics of 174 patient with schizophrenia in different group categories in Palestine and found that 70% of the patients were unemployed, and a study by Sweileh et al. [40] found that 219 from 250 patients (87.6%) were without a job. Although these number show some frustration, several studies of supported employment for individuals with severe mental illnesses have identified improvements in global functioning, depression, and self-esteem in individuals who have obtained competitive employment [41-43]. A 2-years follow up study of a vocational rehabilitation program for individuals with schizophrenia was conducted by Evensen et al. [44] in Norway to assess the competitive employment outcome of the Job Management Program at 2-years follow-up, and to examine whether global functioning, self-esteem, and depression at baseline predicted competitive employment or unemployment at 2-years follow-up. The study included One hundred and forty-eight participants with schizophrenia spectrum disorders in six Norwegian counties received 10 months vocational rehabilitation augmented with either cognitive behavioral therapy (n = 84) or cognitive remediation (n = 64). Participants were assessed at baseline, at the end of the intervention period, and at 2-years follow-up. The results found at 2-years follow-up, 21.2% had obtained competitive employment. A further 25.3% had work placements in competitive workplaces. Significant improvements were found in global functioning, self-esteem, and

depression during the intervention period, but no significant differences between the two intervention groups. High baseline global functioning and self-esteem, as well as positive change in these variables during the intervention period, were significantly associated with higher competitive employment outcome at 2-years follow-up. The results add to existing evidence that competitive employment is attainable for individuals with schizophrenia. High global functioning and self-esteem were strongly associated with competitive employment outcome.

***Islam and Quran as Treatment Intervention***

In Islam, religion and spirituality are not mutually exclusive as you cannot have one without the other. Other religious and spiritual traditions may see them as separate where you can have one over the other [45]. From the biological perspective, different studies have found that being religious increases patients' satisfaction and adherence to treatment [46,47]. This can be applied to Islam in the way it helps with drug adherence through encouraging Muslims to look after their health by seeking advice and receiving treatment as health is considered a gift from God, which should be cherished. The Prophet Muhammad has reported "down a cure even as He has sent down the disease."

Regarding the psychosocial model, there is Islamic counselling, which is similar to Western counselling in the way the clients seek assistance from a suitably qualified person to deal with their psychological problems, the same may be effectively obtained from a religious leader or Imam [48,49]. The main role of the Imam in for this purpose is to provide advice which would be in accordance with the Quranic principles and teachings of the Prophet Muhammad. Muslims approach Imams for counselling on social and mental health issues and particularly marital and family problems [50]. This form of counselling proved to be effective in improving marital adjustment levels of incompatible couples [51].

Another model of Islamic counselling is the traditional healing, here a traditional healer who may be a shaykh who practice various rituals to heal a client. This model explains the illness or personal problems as a possession by spirit (jinn). The solution for a healer is to exorcise the spirit, through reading Quran, prayers, playing music, dancing, and beating spirits, out of the "client's" body, which then frees the person from misery [52].

Nowadays, modifications have been added to different psychotherapeutic techniques in order to comply with Islamic values, for instance, Motivation-enhanced psychotherapy may be facilitated through the use of Islamic concepts, as patients' desire to address a given problem may be aided through the knowledge that this intervention enhances their relationship with God [53].

Psychoanalytic approaches are not widely accepted among Muslims [54,55] in contrast to the concept of individualism used by Western counselling. Islam highlights the importance of community rather than looking inward to establish their identity. Muslims tend to look outward, identify their identity in religious teachings, culture, and family.

Group therapy also may be problematic for many Muslims [56,57]. Although this might seem opposite to the emphasis of Islam on the value of the community, group therapy as practiced in Western settings often conflicts with a number of Islamic values. For instance, some Muslims may feel uncomfortable sharing personal details in

group settings, particularly if members of the opposite gender are present. However, the functions of such groups may be enhanced if they are composed of members of the same gender and involve values taken from the Islamic faith [57].

Practitioners may consider using spiritually modified cognitive therapy, by replacing certain concepts used in Western cognitive therapy with concepts drawn from Islamic teaching [55,58].

Studies on Muslims that used spiritually modified cognitive therapy for anxiety and depression showed faster results as compared with the therapy that is not Islamically modified. Similarly, a study conducted on Muslims with bereavement showed significantly better results with cognitive-behavioral therapy that had been modified to incorporate Islamic beliefs and practices [55].

Another striking study was conducted on Muslim patients with schizophrenia in Saudi Arabia, which revealed spiritually modified cognitive therapy was either similar, or superior, to the results achieved with traditional cognitive therapy [58].

Therapist can use cognitions from the Islamic faith and offer it as an alternative explanation to dysfunctional thoughts associated with a variety of conditions or disorders [59].

There are several significant cognitive themes from the Islamic faith that can help to adapt the patients' cognitive errors.

***Family as a Therapy***

Family is an important socio-cultural component as it is the unit of the society, which has a huge impact on personality development and a potential factor in different psychiatric disorders. Bowlby revealed that the permanent loss of a parent during childhood may increase the vulnerability to certain forms of psychopathology, for example, depression [60].

Karen Horney explained that hostility is not an innate instinct but reactive so egocentrism and antisocial cravings like greed were not inevitable phases of human's development but the expressions of a neurotic process. By helping individuals to grow up under favorable conditions they could develop and lead a healthy life and realize his potentialities [61].

Islam enforces the family role in Muslim's life and emphasizes the religious, moral, and ethical values, on the contrary to Western society, which started nowadays to suffer from moral decay leading to broken families with increased divorce rate and number of unwed mothers and single parent families. Drug abuse and excessive sexual activities are predominant in adolescents and young adults. These events lead to conflict, loneliness, guilt, loss of self-esteem, which results in manifestation of a variety of pathological disorders [62].

Despite the fact that the trials of Western societies to substitute the role of family in the life of the mentally ill patients through the help of social workers and care coordinators is a step forward in their care plan, but it is not as beneficial as family role is. There is nothing like a family especially if this is a supportive family, which can have a great impact on the illness outcome and the patient's quality of life [63].

Psychiatrist and social workers need to consider the impact of family's involvement on individual mental health, which may be a double-edged blade. On one hand, it may be helpful as the family may help in supporting the patients regarding his medications and psychotherapy, which help to improve the outcome.

On the other hand, as the family unit is sacred among Muslim people and it is very common to find different families with over involvement and enmeshment patterns, who are considered a continuous source of support to the individual. In some cases, the family will interfere on behalf of the identified patient, although they too lack in trust, whereas they expect much. For example, they might try to control the interview by answering the questions directed at the client while they withhold information that may be perceived as embarrassing, they may interfere with his medications and choice of treatments [64].

Therefore, the psychiatrist and social workers should educate themselves regarding Islamic values and nature of Islamic family patterns, so that they can in turn sensitively educate the family about the necessary requirement for a workable helping relationship.

***Social Skills Programs Rehabilitation Intervention***

Social skills programs (SSP) use behavioral therapy and techniques for teaching individuals to communicate their emotions and requests. This means they are more likely to achieve their goals, meet their needs for relationships and for independent living as well as getting on with other people and socially adjusting. Social skills programs involve 'model learning' (role playing) which was introduced to improve general 'molecular' skills (eye contact, fluency of speech, gestures) and 'molar' skills (managing negative emotions, giving positive feedback). Social skills programs enhance social performance and reduce the distress and difficulty experienced by people with schizophrenia. Social skills programs can be incorporated as part of a rehabilitation package for people with schizophrenia. In Palestine, there is no documented social skills programs were found as an intervention strategy for these patients. However, it's important to integrate the social skills programs for these patients in Palestine since the patients live with their families (parents' house, with wife and children). Arabic culture is one of the cultures that value the collectivity of the community rather than the individuality of its member citizens. In Islam, "no responsibility was attributed to a child, a psychotic adult or a sleeping or stuporous person." The care of people with mental illness under Islam is considered a family responsibility [17,65]. In Arabic culture, such an illness is viewed as a family issue. Whether the person is hospitalized or not or kept in or discharged from the hospital depends not on the individual needs but the desire of the family. Therefore, in Arab culture, the issues of patient consent, autonomy, and decision making are considered family cantered [65]. In the Arab world, families of patients with schizophrenia suffer from stigmatization [66]. Since these patients' life with their families, it is important to integrate these social skills as an intervention to help them build up both their 'molecular' and 'molar 'skills. Moreover, these skills will help patients to communicate effectively with their families, help them in fighting the stigma toward them and might open the chances for future marriage. According to the numbers reported from studies in Palestine regarding the marital status of these patients, Kremer et al. [39] revealed that (70%) from a total 174 patients were single or divorced; Sweileh et al. [25] revealed that among 250 patients 122 (44.8%) were single or divorced; and in another study Sweileh et al. [40] revealed among the 250 patients 153 (61.2%) were single/divorced. These results highlight the importance of integrating the social skills program with these patients. Social skills programs have shown to be an effective intervention for patients with schizophrenia.

A systematic review by Almerie et al. [67] aimed to investigate the effects of social skills training programs, compared to standard care, for people with schizophrenia. The results of the study were based on 13 randomized trials (975 participants). The study found evidence in favor of social skills programs compared to standard care on all measures of social functioning, they found that rates of relapse and re-hospitalization were lower for social skills compared to standard care. In addition, the participants' mental state results were better in the group receiving social skill programs. Quality of life was also improved in the social skills programs compared to standard care.

In conclusion, compared to standard care, social skills training may improve the social skills of people with schizophrenia and reduce relapse rates.

***Psychosocial Interventions as an Adjunct to Pharmacotherapy***

Provision of anti-psychotic medication alone is inadequate to address the complex social, economic and health needs of those affected by a chronic and highly disabling illness such as schizophrenia. There is, therefore, consensus that the treatment of schizophrenia should combine anti-psychotic medication and psychosocial interventions [68-70]. Drug treatments generally have most effect on positive symptoms, as well as being effective at preventing relapse [71]. The relative inefficacy of anti-psychotic medication in improving functioning or negative symptoms means a broader supportive approach focused on rehabilitation is also required [72]. Furthermore, the balanced care model proposes that mental health systems should include both community and hospital-based care [73]. Psychosocial interventions typically align with the principles of personal recovery, such as the attainment of a fulfilling and valued life [74].

Psychosocial rehabilitation along with antipsychotics is recommended for the management of schizophrenia [75] and have been shown to improve QOL, reduce recurrence and improve social function [76]. In settings of inadequate resources for mental health, the World Health Organization (WHO) Mental Health Gap Action Program (mhGAP) recommends Community Based Rehabilitation (CBR) for people with schizophrenia. CBR is an approach that is intended to improve QOL and provide social inclusion for people with disability. CBR involves community participation and is an effective and feasible model for rehabilitation [77].CBR has been showed to be effective in creating enabling environments for patients with schizophrenia to recover. CBR also addresses social, cultural, and economic barriers to care delivery [78,79]. Therefore, a Quasi-experiment study was conducted by Puspitosari et al. [80] in February-December 2017, in Yogyakarta, Indonesia among 100 patients with schizophrenia (in a group of 2), the study aimed to analyze the effectiveness of CBR to improve the quality of life of people with schizophrenia. CBR intervention using psychoeducation module and social skill module for 12 weeks was performed by local health workers, sub district social welfare workers, community health workers and supervised by a psychiatrist. The QoL was assessed using a validated measuring instrument at the baseline and at the week 16. The results of the study showed that both groups had similar characteristics at the baseline. The intervention group received CBR, whereas the control group did not. Thirty-four people (68%) of intervention group increased their QoL, whereas in the control group there were twenty-three people (46%) increased their QoL. Improvement of QoL in the intervention group is higher than the control group ($p < 0.05$). Thus, this study has showed that this model of CBR is effective in the treatment of schizophrenia in the community. Community

based psychosocial rehabilitation in addition to routine outpatient medications is indeed recommended treatment options for people with schizophrenia [75].

The Schizophrenia Patient Outcomes Research Team (PORT) evidence-based recommendations, developed in the United States, include eight psychosocial interventions, all of which are recommended as an adjunct to pharmacotherapy: Assertive community treatment, supported employment, cognitive behavioral therapy, family-based services, token economy, skills training, and psychosocial interventions for alcohol, substance use disorders and weight management [81]. The strongest evidence is for intensive case management (which has evolved from assertive community treatment) [82], family interventions [83] and psychoeducation [84], with possible impacts on functioning, hospitalizations, and relapse rates. In Palestine, although there are 13 community mental health centers in West Bank, in addition to one psychiatric hospital in Bethlehem, however, these centers are merely confined on providing medications to the patients. Major reasons why there is there is almost no rehabilitation interventions in Palestine is because mental health services are not considered a priority on the ministry of health (MOH) list of budgets. The budget for the mental health services consisted of only 2% of the total budget of the MOH. In addition, to the insufficient number of specialized professionals in the mental health and the absence of the multidisciplinary teamwork is considered a major barrier to implementing community-based interventions in Palestine [8]. Many low and middle-income countries (LMICs) are making important strides towards improving care for people with mental illness, through the integration of mental health into primary care [85]. One of five priority Grand Challenges for global mental health is to "Provide effective and affordable community-based care and rehabilitation", giving recognition to the substantial impact on disease-burden reduction and equity this approach is likely to have, as well as the likely immediacy of impact, and feasibility [86]. However, it is broadly accepted that a narrower group of psychosocial interventions for schizophrenia are likely to be feasible in LMIC compared to high-income countries. The third edition of the World Bank's Disease Control Priorities (DCP-3) recommends that family therapy or support; community-based rehabilitation (CBR); and self-help and support groups should be prioritized in these settings [69]. Therefore, a Systematic review and meta-analysis study by Asher et al. [87], aimed to assess the effectiveness of all types of community-based psychosocial interventions for people with schizophrenia on patient outcomes in low and middle-income countries (LMICs). Eleven randomized controlled trials in five middle-income countries were included in the review (China, South Africa, Iran, Turkey, and India), with a total of 1580 participants. The content of included interventions varied from single-faceted psychoeducational interventions to multi-component rehabilitation-focused interventions, to case management interventions. The study results summarized that the overall community-based psychosocial interventions in LMICs have a strong effect on symptom severity in people with schizophrenia. There was also evidence of a strong effect on functioning and a medium effect on reducing hospital readmissions, though fewer studies measured these outcomes.

In conclusion, the limited evidence from low and middle-income countries supports the feasibility and effectiveness of community-based psychosocial interventions for schizophrenia, even in the absence of community mobilization. Community-based psychosocial interventions should therefore be provided in these settings as an adjuvant service in addition to facility-based care for people with schizophrenia.

***Music Therapy in Symptom Management and Rehabilitation***

The use of music as medical therapy in the Islamic civilization was much influenced by the Greek civilization [88]. Some of the Islamic civilization scholars who used music therapy in medicine were al-Kindi, Ikhwanal-Safa', al-Razi, al-Farabi and Ibn Sina. Al-Kindior his real name, Abu Yaqub ibn Ishaq al-Kindi (801-870M) was identified as the earliest scholar of the Islamic civilization to use music therapy. According to Shiloah (1995) [89], al-Kind adhered to Aristotle's philosophy, that is, music has a relationship with humans and cosmology through the earth elements of water, air, fire, and soil.

From the viewpoint of Abu Bakr Muhammad ibn Zakariya al-Razi (854-932M) or better known as al-Razi, Isgandarova asserted that music is suitable to be used for treating only mental disorders. Abu Nasr Muhammad ibn Muhammad Farabi, or better known as al-Farabi (872-950M), and Ibn Sina (980-1037M) rejected all views which relate music with earth elements or zodiac. Their view was that music has an effect on human health. Further, according to Ibn Sina, music may give an impact on human health due to sounds inherited in human nature which have some functions in producing different emotions.

Music therapy has been lost for more than 1,000 years both in the Muslim countries as well as in the most advanced countries or developed countries in the West. In the last three-decades or so, tremendous interest has been shown in the Western countries in the application of music therapy to treat several diseases and ailments. Music therapy is considered one of the complementary and alternative interventions increasingly used for individuals with schizophrenia [90,91]. Music therapy uses various components of music, such as melody, timbre, rhythm, harmony, and pitch, to support and enhance physical, psychological, social wellbeing through a therapeutic relationship between the participant the therapist [90,92]. Music therapy not only helps individuals relieving stress or expressing their feelings in a safe and socially acceptable way [93], but also enhances the balance of neurotransmitters, which is an important goal in the symptom management of schizophrenia [90,94]. Symptom management is the purpose of implementing interventions for individuals with schizophrenia [95]. Symptoms associated with schizophrenia include both positive (e.g., hallucinations or delusions) and negative (e.g., anhedonia, apathy, or avolition) symptoms, and general psychiatric symptoms (depression or anxiety), in addition to functional impairments [96]. The primary approach to manage symptoms of schizophrenia is anti-psychotic medication to adjust neurotransmitters [91,95]. However, due to the chronic nature of schizophrenia, individuals may also have difficulties with rehabilitation in daily life and social activities, and stress from these difficulties also may aggravate symptoms [97,98]. Therefore, clinicians and researchers have emphasized the importance of complementary and alternative interventions [98,99] such as music therapy. The use of music therapy has resulted in promising outcomes among individuals with schizophrenia. Several researchers have published systematic reviews and meta-analyses on the effectiveness of music therapy in this population. Gold, Heldal, Dahle, and Wigram [100] and Mossler, Chen, Hel-dal, and Gold [101] reviewed randomized controlled trials (RCT) with control groups receiving standard care or other psychosocial interventions for the individuals with schizophrenia or schizophrenia-like disorders. They found that music therapy plus standard care was effective for global mental state as well as symptom management and social function enhancement. Silverman MJ [102] conducted a meta-analysis and reported that music therapy reduced psychotic symptoms independent of whether music was live or recorded, classical or nonclassical, or participant-preferred or therapist-selected. Gold, Solli, Kruger, and Lie et al. [103] also conducted a systematic review and meta-analysis regarding the effectiveness of music therapy for

individuals with serious mental disorders and reported similar findings and furthermore, identified significant dose-response relationships in the improvement of symptoms and functioning of the participants. Another systematic review by Chung & Woods-Giscombe [104] aimed to investigate the influence of dosage, type (active, receptive, or combined), and format (individual or group) of music therapy for individuals with schizophrenia. Seventeen articles met the stated criteria. Dosage of music therapy ranged from 20 to 9,720 minutes. Three types of music therapy were delivered: Active, receptive, or combined, and therapy was implemented via individual or group format. Depending on the dosage, type, and format, music therapy improved psychotic symptom management, depression and anxiety management, social and cognitive functioning, behavior, and quality of life of the participants. Dosage had a greater impact on the effects of music therapy compared to type and format. Studies that implemented a combination of active and receptive music therapy were more likely to produce significant improvements in outcomes compared to the studies that implemented the other types of music therapy. However, studies using combined type provided higher dosage of the intervention (e.g., more minutes of intervention exposure). In conclusion, In the studies reviewed, music therapy was effective in psychotic symptom management, depression management, social and cognitive functioning, behavior, and quality of life of the participants. The results showed that music therapy promotes physical, psychosocial, and social well beings of individuals with schizophrenia. Therefore, it is expected that music therapy will be more increasingly used with various therapeutic purposes for individuals with schizophrenia in various clinical settings including Palestine.

## DISCUSSION

Schizophrenia is considered a chronic and highly disabling mental illness that contributes 15.2 million disability adjusted life years to the burden of disease in low- and middle-income countries (LMIC). Access and adherence to pharmacological treatment is key to improving symptoms and functionality and reducing relapse rates. There is consensus that psychosocial interventions are also an important component of care for schizophrenia. A body of evidence has developed in high income countries (HIC) on five main approaches: Psychoeducation, family interventions, intensive case management, cognitive rehabilitation, and social skills training. These interventions show reasonable levels of effect on outcomes including relapse prevention, reducing hospital readmission, and promoting medication adherence. Within LMIC as Palestine community-based rehabilitation, psychoeducation and support for families are recommended for low resource settings, with assertive community care and cognitive therapy recommended as additions in higher resourced settings with stronger service-delivery platforms.

In Palestine, there is an increasing number of patients diagnosed with schizophrenia reaching 32,559 patients in 2019. In the meanwhile, there is a near absence of rehabilitation interventions or services provided to the patients diagnosed with mental illnesses including schizophrenia due to the conspicuous lack of training, understaffed mental health nurses and specialists, absence of multidisciplinary teamwork, fragmented mental health system, lack of funding and resources, stigma, occupation, lack of budget and others. In this review, several rehabilitation interventions that are provided specifically for patients with schizophrenia were discussed including: Exercise, Vocational rehabilitation, Religion and Quran, Social skills programs, The role of Family, Community-Based Psychosocial Interventions as (Patient and Family Psychoeducation; Crisis Interventions; Home Visits; Stress Management; Self-Help and Support Groups), Community Based Rehabilitation Services to improve the quality of life, and music therapy. All these rehabilitation intervention services played an important role in the process of the recovery and improving the quality of life to these patients. Therefore, Palestine is in a strong need of these

rehabilitation interventions to be implemented. However, there is almost impossible to implement these rehabilitation interventions without increasing the amount of budget of the Ministry of Health on the mental health services, increasing the number of specialists and mental health nurses, investing in mental health services, training the staff, encouraging the multidisciplinary team working, ending the occupation on Palestine and enable the decisions of the legislative council to implement the legislations that encourages the integration of these patients in the labour market.

## CONCLUSION

To conclude, the life of patients with schizophrenia in the Arabic world and particularly in Palestine, is complicated. Barriers as the presence of occupation, lacking awareness about mental illness, stigma, inconsistent availability of medications, absence of multidisciplinary teamwork, insufficient specialists, fragmented mental health system, lack of budget and others stand in the face of implementing efficient and effective intervention and rehabilitation services to improve the quality of life in schizophrenia patients and move toward the recovery process. The priority of the Palestinian health care system should be toward improving the quality of care based on evidence-based practice interventions. These interventions should be culturally sensitive to resilience and Sumud culture [105] which has a promise to enhance schizophrenia patients' recovery.

## STUDY LIMITATIONS

The literature review has discussed schizophrenia rehabilitation interventions and services in Palestine and Worldwide. Palestine is a state that is seeking independence with a scarcity of resources. Palestine has been described as "uncharted territories'' due to a lack of data, resources and records. As a result, there is insufficient data regarding schizophrenia rehabilitation intervention in Palestine. Therefore, there might be resources regarding rehabilitation intervention in Palestine, however, since these interventions were not published the author could not find them to include them in this review.

## COMPETING INTERESTS

The authors declare that they have no competing interests in this section.

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