

Review Article

Emotional Processing among Schizophrenia: Implication for Further Management

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Abstract

In this article we review studies that address the emotional life of schizophrenic individuals. This includes factors examined in the context of emotional disturbance, taken into account the influence of these emotions on schizophrenia psychopathology and finally draw conclusion for further implication based on this previous finding.

Keywords: Emotional Processing; Emotional Disturbances; Schizophrenia & Control Groups; Implication For Further Management; Emotional Regulation and Ways used to Address the Emotional Aspect of Schizophrenic Patients

Emotional Process

When we heard the word processing, our thinking automatically jumped into the idea of task accomplishment either by machine working or the human brain. Emotional processing deficit occurs when emotional disturbances are absorbed and decline to the extent that other behavior and experience can proceed without disruption [1].

Addressing the history of emotions among schizophrenia returned back to Bleuler 1911/1950, who found that schizophrenia symptom have posited to disturbance in emotional processes [2,3].

Again, this means that the emotional distress are not engrossed and maintained to the extent in which other experiences cannot be proceeding without interference. If a disturbance is not absorbed enough, some signs become noticed. The signs of emotional disturbance may include recurrent nightmares, obsessions, phobias, pressure of talk, re-experiencing, return of fears, inappropriate expressions of emotion as to time and place, treatment failures/relapses [1].

Successful emotional process or regulation means effective integrating the information from the emotional state like fear, anger, and happiness with existing memory structures. There are two emotions (memory) processing systems as explained by theorists, which include 1- An abstract, schematic, associative and implicit system that has connections with bodily response systems. This mode involves fast and automatic processes such as priming and spreading activation. 2- An abstract propositional 'rational' system that is analytical, reflective, logical and relies on high level executive functions [1].

Based on this assumption Greenberg SL, Leone PA (2006) proposed four empirically based principles to guide health team member when intervening and working with client emotions, these principles includes (1) awareness and arousal of emotion, (2) enhancing of emotion regulation, (3) reflecting on emotion, and (4) transforming of emotion [4].

Speaking about Emotion awareness and arousal it means accepting once emotional reaction to different event, it implies the primary emotional reaction or in another term, it means the direct, initial or fundamental reaction Becoming aware of and symbolizing core emotional experience in words provide access both to the adaptive information and to the action tendency in the emotion. Level of emotional awareness has been found to be correlated positively with self-restraint and impulse control [4].

The second principle of emotional processing involves the regulation of emotion. Inability to regulate emotions imply that there are a secondary uncontrolled emotional reaction and maladaptive emotion that need to be regulated. Secondary emotions are those responses that are secondary to other more primary internal processes, for example, being defenses., feeling hopeless is secondary when there is an unexpressed feeling of (primary) anger.

Acknowledging, allowing, and tolerating emotion are important aspects of helping to regulate them. Soothing of emotion can be provided reflexively by the individual himself or herself through internal agency and resources or by another person. Among other processes self-soothing involves diaphragmatic breathing, relaxation, development of self empathy and compassion, and self-talk.

The third principle is named reflection on emotion or constructing a new meaning for emotions so it's important for the therapist to encourage their client to create this meaning through developing new narratives to explain their experience

The last principle is named emotion transformation. This transformation applies to primary maladaptive emotions, those old familiar bad feelings that occur repeatedly and are resistant to change. Transformation can be defined as the process through which maladaptive emotions are replaced with more adaptive one [4].

Emotional life of schizophrenic individuals

Previously, it was reported that, blunted affect is a dominate symptom in schizophrenia; and this induces a repeated question which are: is the blunted affect real reflection of emotional experience?. King -Casas B, (2005) stated that "without a doubt,

schizophrenia is not a disorder of distorted perceptions only, is it a disorder of anomalous emotion He sawed schizophrenia blunted affect to be reflecting difficulties with the intensification of emotional expressive behavior [5].

Many theorists attempt to investigate an emotional aspect among schizophrenic patients. Henry et al. (2007) found that some schizophrenic patients presented with a peculiar experience of affect by mode of being chronically 'low responding', and for this group anhedonia was a central presenting feature. He found that this evidence for selective impairment of intensification, but not in the suppression of emotion expressive behavior for individuals with schizophrenia. However, the generalizability of this result limited by the clinical sample's, long duration of illness, and use of antipsychotic medication [6].

So Henry JD et al. (2009) conducted a further study to assess whether apparently healthy individuals vulnerable to schizophrenia present with similar difficulties. The results suggest that, although blunted affect is associated with increased use of suppression, it cannot be regarded as the primary mechanism underlying this disturbance. Their findings therefore support the idea that there is a disjunction between the experience and expression of affect in schizophrenia and this may at least partially reflect a specific deficit up-regulating emotion expressive behavior. This result was consistent with the previous study evidence showing expressive suppression to be associated with a diminished experience and expression of positive affect [6,7].

Speaking about the involvement of physiological system in this aspect Suslow et al. (2003) showed that blunted affect may reflect abnormal suppression of emotional responses that otherwise cause excessive load upon an overly sensitive physiological system [8].

Wout MV (2006) reported that other demonstrated that facial reactions in schizophrenic patients accessed via EMG (Electromyogram) in response to seeing different pictures of facial expressions exhibited greater reactivity of facial muscles than did non patient controls [9].

However, Kolet L (2005) uses the cue-modulated startle reflex as a method to study emotional processes and emotional deficits in schizophrenia. Results indicated that there were no significant differences in the affective modulation of the startle response to the pictures between patients and control groups. Furthermore, there were no significant differences in the subjective valence ratings of the pictures between patients and controls [10].

Where by schizophrenic patients rated all pictures as more arousing, but the pattern of the arousal ratings of patients did not differ from that of the controls.

These findings suggest that involuntary emotional reactions as well as subjective emotional experience are unimpaired in schizophrenia. However, because patients as well as controls did not display a typical startle response, it cannot be decisively concluded from this data that schizophrenics have a normal affective startle modulation. So the author concluded that further research is needed to examine if schizophrenics have deficits in affective startle [10].

Johnston PJ et al. (2006) uses a differential deficit design to test

that people with schizophrenia perform poorly when recognizing facial expressions of emotion, particularly negative emotions such as fear. Facial emotion recognition accuracy for seven emotion categories was compared across three groups (eighteen schizophrenia patients, one group of healthy age- and gender-matched controls) these groups viewed identical sets of stimuli [11].

The level of stimulus degradation was chosen so as to equate the overall level of accuracy to the schizophrenia patients. Both the schizophrenia group and the degraded image control group showed reduced overall recognition accuracy and reduced recognition accuracy for fearful and sad facial stimuli compared with the intact-image control group. There were no differences in recognition accuracy for any emotion category between the schizophrenia group and the degraded image control group. These findings argue against a negative emotion specific deficit in schizophrenia [11].

Howevwe, Monkul S et al. (2007) who stated that patients with schizophrenia are impaired in both emotion perception and contextual processing; however, these two processes have not been thoroughly assessed simultaneously in adults with schizophrenia [12].

So he conducts studies to examine the impact of social contextual information upon the perception of emotional intensity in schizophrenia. Thirty clinically stable outpatients with schizophrenia and 30 demographically matched healthy subjects assessed the intensity of a single emotion which include (anger, disgust, happiness, sadness or fear) from an image of people presented under two conditions (context-free and context embedded). During the first assessment, a single person (face and body) was presented without any background (e.g., contextual scenery) [12].

While the second assessment included the same person, but with the original background of the image. Differences between the first and second ratings provided an index of the extent to which contextual information was used to judge emotional intensity. Without contextual cues, patients with schizophrenia viewed scenes as having greater disgust and anger than healthy subjects [12].

The finding indicates that patients were less impacted by contextual cues as evidenced by the minute changes in their assessments. These results suggest that patients with schizophrenia differ from healthy subjects in both their ability to rate emotional intensity and the influence of contextual adjustment upon such ratings [12].

Ruocco AC et al. (2014) compared emotion recognition deficits in schizophrenia, schizoaffective disorder and bipolar disorder with psychosis to determine the familiarity of emotion recognition deficits across these disorders, and to evaluate emotion recognition deficits in non-psychotic relatives with and without elevated Cluster A and Cluster B personality disorder traits [13].

Participants included groups with schizophrenia (n= 297), schizoaffective disorder (depressed type, n=61; bipolar type, n=69), bipolar disorder with psychosis (n= 248), their first-degree relatives (n=332, n= 69, n=154, and n=286, respectively) and healthy controls (n= 380). All participants completed the Penn Emotion Recognition Test, a standardized measure of facial emotion recognition assessing four basic emotions, namely; happiness, sadness, anger and fear. In addition to neutral expressions; i.e. no emotion [13].

Results showed that emotion recognition deficits among different groups compared to controls, increased progressively from bipolar disorder to schizoaffective disorder to schizophrenia. Relative groups showed similar deficits perceiving angry and neutral faces, whereas deficits on fearful, happy and sad faces were primarily isolated in schizophrenia group. Even non-psychotic relatives without elevated Cluster A or Cluster B personality disorder traits showed deficits on neutral and angry faces. Emotion recognition ability was moderately familial only in schizophrenia families.

The authors concluded that emotion recognition deficits are prominent, but somewhat different across psychotic disorders. These deficits are reflected to a lesser extent in relatives, particularly on angry and neutral faces. Deficits were evident in non-psychotic relatives, even without elevated personality disorder traits. Deficits in facial emotion recognition may reflect an important social-cognitive deficit in patients with psychotic disorders [13].

From other angle, Maat A et al. (2015) has been attempting to examine whether these deficits in emotional process among schizophrenia are state dependent and affected by the psychotic breakdown or it's a stable trait. Emotional Processing (EP) was assessed with the degraded facial affect recognition task in schizophrenia patients (N=521) and healthy controls (N=312) at baseline (T1) and after a three year follow-up (T2). In schizophrenic patient symptomatic remission was assessed with the Positive and Negative Syndrome Scale (PANSS) remission tool [14].

Patients were divided into four groups: Remission T1 and Remission T2 (RR); remission T1 and Non-Remission T2 (RN); Non-remission T1 and Non-remission T2 (NN) and Non-remission T1 and Remission T2 (NR). Factorial repeated measures ANCOVA was used to compare EP performance over time between groups. Age, gender and general cognition were included as covariates.

Results showed that schizophrenic patients performed worse than healthy controls on an EP at T1 ($p=0.001$). The patients that were in symptomatic remission at both time points (the RR group) performed worse than the healthy controls at T2 ($p < 0.001$). Significant group \times time interactions were found between RR and RN ($p=0.001$), and between NR and RN ($p=0.04$), indicating a differential EP performance over time. No group \times time interaction was found between NN and NR [14].

They concluded that relatively poor EP performance in schizophrenia patients compared to healthy controls. EP performance in schizophrenia patients was associated with symptomatic remission. The results provide support for the hypothesis that EP deficits in schizophrenia are both state and trait dependent [14].

In spite of the above mentioned studies still there are a number of studies suggest that not all emotion processes are diminished. This means that although patients with schizophrenia having a reduced ability to express emotions, they report equal levels of experiencing positive and negative emotions as controls [15].

Wout MV, (2006) reported that the researches which have been done to investigate emotional expressiveness in patients with schizophrenia using videotaped, while patients were watching affect-eliciting stimuli showed that patients with schizophrenia were facially less emotionally expressive compared to control participants [9].

Many authors attempt to address details of emotional aspect, for example, Kohler CG, (2008) conducted study to examine static facial expressions of emotions for evidence of flattened and inappropriate affect in persons with stable schizophrenia. 12 individual with stable schizophrenia and matched healthy controls undergoing a standardized procedure for posing and evoked facial expressions of five universal emotions, including happy, sad, anger, fear, and disgust expressions, at three intensity levels. Subjects completed self-ratings of their emotional experience. Certified raters coded images of facial expressions for presence of action units (AUs) according to the Facial Action Coding System [16].

Logistic regression analyses were used to examine differences in the presence of AUs and emotion experience ratings by diagnosis, condition and intensity of expression. Results showed that the patient and control groups experienced similar intensities of emotions, however, the difference between poses and evoked emotions was less pronounced in patients. Differences in expression of frequent and infrequent action units (AUs) support clinical observations of flattened and inappropriate affect in schizophrenia. Specific differences involve the Duchenne smile for happy expressions and decreased furrowed brows in all negative emotion expressions in schizophrenia [16].

Based on this finding they conclude that while patterns of facial expressions were similar between groups, general and emotion specific differences support the concept of impaired facial expressions in schizophrenia. Expression of emotions in schizophrenia could not be explained by impaired experience. Future directions may include automated measurement, remediation of expressions and early detection of schizophrenia [16].

While, Der Meer VL et al. (2009) investigated the relationships among emotion regulation strategies, alexithymia (i.e. Inability to identify and verbalize feelings) and the role of pre-morbid IQ on alexithymia in schizophrenia. 31 schizophrenia patients and 44 healthy subjects were tested on measures of emotion regulation strategies (ERQ), alexithymia (BVAQ) and pre-morbid IQ (NART) [17].

Their results revealed that Patients reported significantly more use of suppression strategies and tended to use less reappraisal strategies. Patients differed significantly on the cognitive, emotional component of alexithymia. This difference remained significant even with a pre-morbid IQ as a covariate, but disappeared with depression as a covariate. Schizophrenia patients have specific difficulties identifying their feelings, which were related to symptoms of depression. They concluded that emotional well-being in schizophrenia patients could be promoted through Interventions targeted at affect regulation and the recognition of the own emotional state [17].

While Kimhy D, et al. (2012) compared emotion awareness and regulation in individuals with schizophrenia and healthy controls, and then, within the schizophrenia group, they examined the impact of this on social functioning Forty-four individuals with schizophrenia and 20 healthy controls completed measures of emotional awareness, emotion regulation, and social functioning, in addition to control measures, including neurocognitive functioning. Compared to controls, individuals with schizophrenia displayed significant deficits

describing and identifying their emotions and used significantly less reappraisal and more suppression to regulate their emotions [18].

Among the schizophrenia group, better social functioning was associated with the ability to identify, and in particular to describe emotions, better emotion management, as well as greater use of reappraisal and less use of suppression. A hierarchical multiple regression analysis indicated that, after controlling for age and neurocognition, difficulties describing feelings accounted for 35% of the social functioning variance. Their study highlights the importance of emotion awareness and regulation in schizophrenia, pointing to their substantial influence on social functioning above and beyond the impact of neurocognitive functioning [18].

Kimhy D, et al. (2014) examined the links between emotional regulation (EG) and Social Function (SF) using an Experience Sampling Method approach, 77 individuals with schizophrenia and 27 healthy controls rated their momentary emotions (sadness, anxiety, anger, and happiness) up to 10 times/day over a two-day period using mobile electronic devices. For each participant, then they calculated the within-subject average correlations between the momentary emotion ratings, producing two EG indices. EGI all for all emotions and EGI neg for negative ones. A subsample of participants with schizophrenia also completed self-report, interview, and ability-based measures of SF [19].

Their findings indicate that individuals with schizophrenia have a relatively intact ability to differentiate between negative emotions in everyday life. However, they experience significant difficulties differentiating between positive and negative emotions, and this may contribute to their social difficulties.

Factors examined in the context of emotional processing disturbance among schizophrenic patients

Many authors attempt to examine different factors associated with emotional processing disturbance. Brown EC et al. (2014) investigates the role of endogenous oxytocin in social behavior in schizophrenia. Basal plasma oxytocin levels were collected from 28 patients who were then given a joystick-based Approach-Avoidance Task (AAT). Reaction times were recorded and AAT effects cores calculated for responses to happy and angry faces, which either had direct or averted gaze. Individual differences in basal oxytocin had a significant relationship with AAT responses, and patients with higher levels of oxytocin tended to avoid angry faces more. Furthermore, greater avoidance of angry faces was correlated with more severe psychotic i.e., positive symptoms and greater paranoia [20].

Based on this finding, he suggested that the endogenous effects of oxytocin may be specific to the interpretation of negative, threatening emotions in schizophrenia patients, and also provides evidence that psychotic symptoms and paranoia can impact on social approach behavior by heightening threat avoidance [20].

Lehmann A et al. (2014) attempt to investigate cognitive and affective aspect of **empathy** in the angle of the subjective experience of **emotion processing**, including emotion regulation, emotional contagion, and interpersonal distress, in individuals with schizophrenia and healthy controls. In addition, Fifty-five patients with paranoid schizophrenia, and 55 healthy controls were investigated using the Multifaceted Empathy Test and Interpersonal

Reactivity Index, as well as the Subjective Experience of Emotions and Emotional Contagion Scales. Individuals with schizophrenia showed impairments of cognitive empathy, but maintained emotional empathy [21].

Schizophrenic patients in this study reported a significantly more negative emotional contagion, overwhelming emotions, lack of emotions, and symbolization of emotions by imagination, but less self-control of emotional expression than healthy persons. Besides cognitive empathy, the experience of a higher extent of overwhelming emotions and of less interpersonal distress predicted psychosocial function in patients. People with schizophrenia and healthy controls showed diverging patterns of how cognitive and emotional empathy related to the subjective aspects of emotion processing. The authors assumed that variables of emotion processing are important mediators of empathic abilities in schizophrenia [21].

Tabak NT et al. (2015) hypothesized that patients endorsed lower levels of mindfulness will have lower levels of emotional regulation. They found that schizophrenic patients exhibited lower levels of mindfulness than controls. In patients, mindfulness was unrelated to negative symptoms, but it was associated with more adaptive emotion regulation (greater reappraisal) and beliefs (lower dysfunctional attitudes). Findings from this study suggest that schizophrenic patients may benefit from mindfulness-based interventions, demonstrate strong relationships between mindfulness and psychological constructs related to adaptive functioning [22].

Speaking about the effect of antipsychotic medication on emotional expressivity Wolf, k et al. (2003) compared fifteen olanzapine-treated, schizophrenic patients with nineteen healthy subjects over a period of two weeks. Emotions were induced by showing pictures from the International Affective Picture System. The activity of five facial muscles was measured with a new, highly sensitive and discriminative facial EMG, recording pre-visible facial muscle activity. The Positive and Negative Syndrome Scale (PANSS) and the Simpson-Angus rating scale for Extrapyramidal Side Effects (EPS) were administered [23].

Few pharmacological intervention studies have examined the impact of medication on social cognition, particularly emotion perception. Penn DL et al. (2009) conducted randomized, double-blind. This study is to compare the effects of several second generation antipsychotics and a first generation antipsychotic, perphenazine, on emotion perception in individuals with schizophrenia. Patients were assigned to receive treatment with olanzapine, quetiapine fumarate, risperidone, ziprasidone or perphenazine for up to 18 months. Eight hundred and seventy three patients completed an emotion perception test immediately prior to randomization and after 2 months of treatment [24].

They also examined baseline predictors of emotion perception change. Most treatments were associated with a small, non-statistically significant improvement in emotion perception at two months, although they did not differ from one another. Greater improvement in emotion perception at 2 months was significantly predicted by lower baseline emotion perception and higher baseline neurocognitive functioning, and marginally predicted by less time on an antipsychotic [24].

Moreover, Roberts, D L et al. (2010) perform study to evaluated whether individuals treated with olanzapine (n=117) or quetiapine (n=106) achieved improvements in social cognition. Participants were drawn from a larger 6-month, multi-site, randomized, double-blind clinical trial. Social cognition was assessed using signal detection analysis of performance on the Social Cue Recognition Test [25].

Social functioning was measured with an interpersonal functioning index and a broader quality of life measure. Results revealed that participants in both medication groups improved significantly, but modestly on three out of four social cognition subscales. The small observed effect in this trial is generally consistent with previous studies, and supports the need for ongoing research into the biological mechanisms of social cognitive dysfunction in schizophrenia [25].

Whereas, Maat, A et al. (2014) conducted 8 -week, randomized, multicenter, open-label study to examine the effects of aripiprazole and risperidone on social cognition and neurocognition in individuals with schizophrenia. Eighty schizophrenia patients (DSM-IV-TR) aged 16–50 years were administered multiple computerized measures of social cognition and neurocognition including reaction time at baseline and the end of week 8. Social functioning was mapped with the Social Functioning scale and Quality of Life scale. The study ran from June 2005 to March 2011. Scores on social cognitive and neurocognitive tests improved with both treatments, as did reaction time. There were few differences between the two antipsychotics on (social) cognitive test-scores. The aripiprazole group performed better (more correct items) on symbol substitution ($P=.003$). Aripiprazole was also superior to risperidone on reaction time for emotional working memory and working memory ($P=.006$ and $P=.023$, respectively). Improvement on these tests were correlated with social functioning [26].

The study reveals that un-medicated schizophrenic patients showed fewer joy/smile reactions than the control group. Compared to healthy controls, the relative smile frequency was not significantly changed by olanzapine. The smile frequency and its changes over time are not significantly correlated with the PANSS depressive syndrome. The changes of facial muscle activity do not correlate with EPS. (Wolf, K et al. 2003) [23].

Concerning the cognitive factors Kamel NF (2010) study the relationship between depression, self esteem, negative schematic beliefs and positive psychotic symptoms of schizophrenic patients. She found that there is a positive and significant correlation between depression, self esteem, negative schematic beliefs and positive psychotic symptoms of schizophrenic patients. Moreover, a schematic belief moderates the relationship between depression, self esteem, and positive psychotic symptoms of schizophrenic patients. [15].

Silver H; (2004) examined the effect of emotion training exercises on the perception of facial emotional expression among schizophrenia patients. Twenty male chronic schizophrenia patients undergo three training sessions using a computerized Emotion Training program, developed for teaching autistic children, which was adapted to the clinical setting. Patients were assessed before and after training with validated tests of identification of facial emotions (PEAT, ER40), differentiation of facial emotions (EmDiff) and working memory. In comparison to baseline, patients performed significantly better on

the PEAT and ER40 tests after training. No change was observed in EmDiff or in cognitive test performance [28].

They reported that the Brief Emotion Training can improve recognition of facial emotional expressions in chronic schizophrenia patients. This may be due to increased patient awareness of emotional aspects of stimuli and produce improvement in specific emotional perceptual skills. Further studies of Emotion Training as a potential treatment modality are warranted [28].

This finding supported the previous idea expressed by (Batten SV et al. 2000) who stated that “While the experiential therapies have a longer tradition of interest in therapist variables associated with emotion, these therapies have focused more on the role of genuineness and accurate empathy on the part of the therapist with respect to client change rather than emotion expressed within supervision” [29].

The influence of emotions on psychopathology

The thought that there is an etiological link between emotional disturbances and the development of psychosis is not a new one.

The influence of emotion on schizophrenia extends to numerous other aspects, including memory, attention deficits and positive symptoms (i.e., hallucinations and delusions). Specifically, increasing evidence indicates that not only cognitive abnormality and positive symptoms are generally exacerbated by stress, but also the effects of emotion upon memory may vary according to symptom presentation [5,27].

Over hundred years a range of theories have been suggesting such relationship. These theories have generally stuck to one of three main schools of thought and have been classified as either dynamic, defense, and direct theories [30].

The role of processing underlying emotion has recently recognized as important factors underlying many problems like generalized anxiety, and it has an influential effect on different treatment approaches like cognitive therapy, Emotion-Focused Therapy (EFT) [30].

Leone PA & Greenberg SL (2007) examined observable moment-by-moment steps in emotional processing as they occurred within productive sessions of experiential therapy. Global distress was identified as an unprocessed emotion with high arousal and low meaningfulness. The investigation consisted of 2 studies as part of a task analysis that examined client’s processing distress in live video-recorded therapy sessions. Clients in both studies were adults in experiential therapy for depression and ongoing interpersonal problems [31].

In Study I: the qualitative findings revealing: global distress, fear, shame, and aggressive anger as undifferentiated and insufficiently processed emotions; the expression of needs and negative self-evaluations as a pivotal step in change; and assertive anger, self-soothing, hurt, and grief as states of advanced processing. Study 2 tested the model using a sample of 34 clients in global distress. A multivariate analysis of variance showed that the model of emotional processing predicted positive in-session effects, and bootstrapping analyses were used to demonstrate that distinct emotions emerged a moment by moment in predicting sequential patterns.

The dynamic school hypothesized that over time the abnormal emotional experiences disrupt the processing of information and the procession of rational thinking, impairing the capacity to form links between mental constructs, and thereby producing delusions and other psychotic symptoms (Fuentenebro F & Berrios G,1995) [32].

Defense theories entail that psychotic symptoms act as defensive mechanisms to extreme, harmful emotional experiences by present another explanation of reality. Psychotic experience is supposed to stop upsetting emotions from entering into an individual's awareness. It is believed that the onset of psychosis signifies a regression from adequate levels of ego functioning where reality based psychological defenses become unstable [33].

Finally, direct theories which proposed that extended levels of high excitement, will be often associated with emotional distress, lead to cognitive disturbances such as a loosening of associations, dissociation, and deficits in attention. These disturbances, in combination with physical exhaustion and restlessness, impair an individual's ability to effectively manage sensory input and eventually lead to the development of hallucinations and delusions [33].

The emergent direct theories consistent with past conclusion made by (TARRIER et al. 1991) who reported that psychotic relapses can be predicted at 75% of patients based on increasing scores for hallucinations and depressive symptoms in the two months prior to a relapse [34].

For example, in many cases, delusions and hallucination may be interpreted to a direct representation of emotional concerns. Emotional disturbance may lead to symptom maintenance. The content of hallucinations less often directly expresses the emotional concerns of the individual, but emotion can generate and contribute to the maintenance of hallucinatory phenomena, although how this occurs is not well understood. It was concluded that the research study is needed to assess the interaction between psychotic and neurotic processes in the development of delusions and hallucinations [35].

Implication for further management

Based on the above mentioned review the following suggestions have been recommended for further management:

- Schizophrenic patients need more organized sessions providing them with some ways to relief their emotional suffering and to reduce the possibility of further emotional impairment.
- Expression of feelings should be encouraged to reduce disjunction between patient experience and expression of this experience.
- Emotional assessment should be done using a variety of scales that are more specific for schizophrenic patients like Calgary depression, Facial Action Coding System for the early detection and management of any emotional problem.
- Periodically assessing factors associated with disturbances in emotional process and regulation like dysfunctional schema, level of awareness, cognitive empathy, reflection and reconstruction process, levels of oxytocin, and level of mindfulness.

- Be genuine with the patient and avoid threatening approach.
- Reducing period of isolation induced by the patient and enhancing social networks and social interaction.
- Use appropriate nursing interventions to reduce the voices and delusions and other symptoms of schizophrenia.
- Applying techniques that are proven to be correlated positively with emotional regulation enhancement such as Mindfulness practice, using medication that have less effect on patient 'emotions.

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