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# Gender Differences in Emotional Intelligence and Coping Strategies in Patients of Bipolar Depressive Disorder

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**Abstract** **Original Research Article**

***Introduction:*** Bipolar Affective disorders make up an important category of psychiatric illness. These patients encounter significant life adversity, which has contributed to these being one of the leading causes of disability. Emotional Intelligence is the ability of an individual to understand one's own and other's emotions and feelings and usethis knowledge in coping with situations. Coping abilities of individuals determine the vulnerability to stressful life events, which is an important factor influencing the risk for relapse. Ways of coping are an individual's overt and covert behaviors which are employed to reduce or eliminate psychological distress or stressful condition. Yet research on which coping strategies are most influencing disability, in such patients and their comparison between male and female patients is very scarce. ***Aim & Objectives of Study:*** Gender difference in emotional intelligence and coping strategies in persons with bipolar depressive disorders. ***Materials & Methods:*** It was a cross-sectional study conducted on stable patients who came for follow-up in Psychiatry OPD of DMC&H, Ludhiana. A total of 150 subjects were included. The sample was divided into 3 groups: Females with Bipolar depression (n=50), Males with Bipolar Depression (n=50), Healthy controls (n=50), age matched. The subjects were evaluated on their symptoms via HAM-D scale and their coping strategies by using the Brief Cope Questionnaire. ***Result:*** All the subjects were equally divided in terms of genders. Females scored higher on HAM-D than males. Females used emotion focused coping strategies significantly whereas males used problem focused coping strategies. It was also seen that females score higher on emotional intelligence than males. ***Conclusion:*** Our study showed females had significant association with the use of emotion focused coping strategies and males showed significant association with problem focused coping strategies. It was also seen that females score higher on emotional intelligence than males. Patients need to get the knowledge about their coping strategies which may help them in long term prognosis and outcome of illness.

**Keywords**: Bipolar disorder, depression, emotional intelligence, coping strategies, gender difference in emotional intelligence.



## INTRODUCTION

Mood is a diffuse persistent feeling state, which lasts hours, days, or longer, while emotions are short-lived responses to stimuli that elicit adaptive responses. Emotional reactivity refers to the threshold for, and magnitude of, emotional responses to these salient stimuli. These emotional responses typically involve changes in several response systems, including perception, feelings, expressive behavior, and peripheral and central physiology. Emotional regulation is a part of an individual's coping style and plays an important role in determining the risk of future episodes. Mood disorders are a chronic mental illness associated with reduced quality of life, high rates of suicide, and high financial costs. Among Mood Disorders, Bipolar depressive disorder is very prevalent and disabling condition in which partial successful treatment is achieved with pharmacotherapy. Various psychosocial interventions are accepted concepts of Coping and Emotional Intelligence have role to add on to efficacy of medication [1].

Emotional intelligence (EI) has proven to be a significant influence indifferent areas of everyday life.

It is defined as the capacity to process emotional information accurately and efficiently. This processing includes the capability to perceive, assimilate, understand, and manage emotions. Emotions facilitate thinking by directing attention to changes, such as work that needs to be done and time that is running out. In 2016, a set ofprinciples were used to guide the theorizing of EI, and it was located among broad intelligences. In this model, EI is considered a hot broad intelligence. "Cool intelligence relates to impersonal knowledge, whereashot intelligence has to do with matters that are highly affective; they makeour blood boil or chill out hearts [1].

The new model by Mayer et al., [1] defines EI as "the ability to reason validly with emotions and with emotion-related information, and to use emotions to enhance thought". These abilities involve identifying emotional content, facilitating thinking, understanding meanings of emotions, and managing emotions. It puts forth another Four-Branch Model comprising the branches: perceiving emotion (with seven abilities), facilitating thought using emotion (five abilities), understanding emotions (eight abilities), and managing emotions (six abilities). In this model, new abilities were added, ability from the original model was divided into two separate abilities, and a number of abilities from the previous model were kept intact [1]. Socially, females are known to have greater EI than males. It is described gender as a social process where some activities are more masculine or feminine [2]. There are traits desirable for one gender but not the other; assertiveness is a typical male characteristic whereas empathy is a desirable female characteristic. Through experiences in childhood, females learn to give more value to nurturance and interpersonal interconnectedness than males do [3].

In female brains, certain areas of emotional processing are larger than the corresponding areas in males. And besides males and females are different in cerebral processing of emotions giving rise to the differences in EI [2].

Although emotion and cognition were considered to be separate aspects of the psychiatry in the past, researchers today have demonstrated the existence of interplay between the two processes.

Emotional intelligence (EI), or the ability to perceive, use, understand, and regulate emotions, is a relatively young concept that attempts to connect both emotion and cognition. While EI has been demonstrated to be positively related to well-being, mental and physical health, and non- aggressive behaviors, little is known about its underlying cognitive processes [4].

Despite the crucial role that emotions play in our lives, their mechanics are still not properly understood. What is accepted in the research community is that emotions imply physiological, cognitive, and behavioral changes as well as those they have both positive and negative valences [5].

Emotions and cognition have been understood to be different, and even incompatible, aspects of the human psyche in the past. Nonetheless, today the scientific evidence shows that. Emotions have an important influence on our cognitive processing, and that a balance between cognition and emotion could be the best strategy for correct environmental and social adaptation [4].

EI could favor to manage, in a more proper way, our cognitive resources. For instance, training EI abilities may help to diminish the negative bias of depressed people towards neutral stimuli and of non-depressed people after a negative mood induction by perceiving emotions and situations in a more positive way [6]. Also Stress and coping have been identified as important variables affecting health. The way in which people manage stress can both reduce and enhance the effects of stressful life events andadverse conditions.

Evidence indicates that psychosocial stress might play an important role inthe onset and course of BD. According to a recent path physiological model of BD, coping abilities might play a role in modulating the relationship between stress and episodic recurrence, which can be directly affected by neurofunctional and neurostructural damage associated with a recurrent course of BD [7].

Psychosocial interventions as an adjunct to the efficacy of medication sug- gests that adjunctive psychological treatment can improve specific illness outcomes, but such interventions should be applied as early as possible and should be tailored to the specific needs of the patient. Most psychosocial interventions involve the integration of cognitive, behavioral, and biological components to help patients cope with life's demands [8].

However, there is a paucity of research on the coping strategies used by poorly adherent patients with BD in self-managing their chronic illness. To help address this gap, the present study assessed perceived coping strategies for the self-management of BD Two categories of coping behavior have often been referred to in the literature: problem-focused and emotion-focused coping [9]. Problem-focused coping, including planning and active coping, has been defined as behavioral and cognitive efforts to alter or eliminate a stressor. In contrast, emotion-focused coping, which is generally considered to be less effective than problem-focused coping, is aimed at changing emotional responsesto the stressor.

Women tend to use emotion-focused coping strategies to manage stressors that are more associated

with depression than men. The literature has shown that women who use more emotion-focused coping styles in response to stressors report more depressive and anxiety-related symptoms compared with women who use these methods less often [10].

It was seen that women on the use of particular negative cognitive styles (i.e., patterns of thought processes often used as methods of coping in response to stress and emotional situations, such as cognitive avoidance and ruminative tendencies) provides additional information on the nature of sex differences in stress responsivity and the occurrence of depressive and anxiety symptoms [11].

For instance, patients who respond to stress with negative cognitive report more depressive symptoms compared with others who use the same cognitive styles. It was also found that cognitive avoidance was significantly related to increases in anxiety and depressive symptoms over time in women, but not in men. However, though these studies indicate that women with particular negative cognitive response styles to stress have more depressive symptoms compared with other women and men, few studies have addressed similar moderated relationships between biological sex and emotion-focused coping methods such as venting, self- blame, use of emotional support, and positive reframing.

Due to the strong association between these coping styles and negative affect, women who use these emotion-focused methods of coping might be at particular risk for higher levels of depressive symptoms compared with men who endorse similar levels of emotion-focused coping and women who use these coping strategies less frequently. These sex differences in handling stressful situations could constitute a vulnerability that puts women at risk for developing clinical levels of depression [10].

## AIMS AND OBJECTIVES

1. To compare emotional intelligence among both males and femalesof bipolar depressive disorder.
2. To compare the various coping strategies among both males andfemales of bipolar depressive disorder.

## REVIEW OF LITERATURE

### EMOTIONAL INTELLIGENCE

Emotional intelligence affects: a) one's performance at work b) physical health c) mental health d) relationships. Uncontrolled emotions can affect mental health by making person them more vulnerable to relapse.

The concept on Emotional intelligence is to capture the individual differences in extent to which people experience, understand regulate and utilize their emotions. Accordingly, Emotional intelligence has been measured using personality like questionnaires.

In Emotional Intelligence models, emotion related self-perceptions have been repeatedly shown to form four interrelated factors: well-being, self-control (regulation of emotions and impulses), emotionality (perception and expression of emotions) and sociability (pertaining to interpersonal utilization and management of emotions) [12].

A recent review and meta-analysis of research discussed how to construct emotional intelligence is particularly useful in capturing individual differences in emotion regulation.

High Emotional Intelligence regulates their emotions in flexible manner (i.e., they can recognize when emotions are informative and when they have to be regulated) and in a way that is consistent with their goals as well as adaptive (i.e., maximizing long term survival and welfare). This review also showed that emotional intelligence is positively linked to functional coping strategies (problem solving, social support seeking and reappraising) and negatively linked to dysfunctional strategies (inhibition of emotional expression) welfare [13].

Coping strategies or mechanisms are remedial actions undertaken by people whose survival and livelihood are compromised or threatened. Coping strategies encompass combinations of thoughts, beliefs and behaviors that result from experience of stress.

The most common type of coping strategies includes problem- focused coping and emotion focused coping. In a study it was found, it was found that the control group employed coping mechanisms of self-control seeking social support, accepting responsibilities, planful problem solving. The negative strategies were escaping, avoidance and distancing was used to greater extent [14].

Problem focused coping is aimed at reducing the demand of stressful situation or expanding the resources to deal with it. It involves directconfrontation with stressor either through direct action or through realization of specific problem-solving activities. The focus is how to deal with agents that induce stress. Emotion focused coping aims at controlling the emotional response to stressful situation. People regulate emotional response through behavior approaches. In emotion focused coping the individual tries to change his feelings and thought about it.

Numerous studies have been done before to know relationship between emotional intelligence and depression. One study done in 2016 support the role of emotional intelligence suggesting that distancing and escaping may be a way of decreasing negative emotions

that are exacerbated by maladaptive emotional coping strategies such as self-blame andhelplessness [15].

Similar study done in Australia, it was found that higher emotional intelligence would be related to decreased levels to emotional distress and to more a planful problem focused coping but to less emotion focused coping when faced with stressful situations [16].

A similar study done in India found out that females are more inclined to use more emotion-focused coping strategies (distancing, escape avoidance) compared to males. Males used more problem focused strategies (seeking social support, confronting, planful problem solving [17]. According to review study, it was found that high Emotional Intelligence are associated with coping strategies based on problem solving while low levels are associated with coping strategies based on avoidance.

Therefore, Emotional Intelligence plays an important role in emotional self-control and individual's adaptive capacity to cope with stressful situations.

A study conducted in Cleveland USA by Blixen et al., to study coping behaviors in patients of bipolar depressive disorder demonstrated that there were two major domains of coping strategies used to self-manage [7].

1. Problem focused
2. Emotion focused Problem Focused Altering Lifestyle Behaviors:

- Eating healthier was a coping strategy used by some respondents to improve their nutritional intake and overall health and others exercised to improve mobility and flexibility
- Keeping to a schedule

Taking mood-stabilizing medications at the same times every day was a coping strategy used by some respondents:

**a) Seeking knowledge on Depressive Disorder**

Increasing knowledge about Bipolar Depressive Disorder, either by reading the instructions that came with their medications, or using the internet, was reported as being helpful in coping with managing.

**b) Socializing**

Socializing with family and friends was a conscious effort by some to copewith the isolation that often comes with Bipolar Depressive Disorder.

**c) Self-monitoring**

Monitoring their thoughts and actions was a coping strategy used by somerespondents in facing the, sometimes, onerous task of managing. Talking to oneself about how to slow down and think things through was one method used to self-monitor behaviors and keeping a journal to keep track record of their moods and symptoms.

**EMOTION FOCUSED**

(Distracting activities, denial, isolation, modifying/avoiding, helping others,and seeking social).

**Distracting**

Respondents cited many coping strategies that helped in distracting them from the stress associated with self-managing their chronic mental illness. Some respondents cited spiritual domains, such as praying, meditation, and thinking positively as helping them cope.

**Keeping busy**

Playing music, reading, or watching TV were cited as coping strategiesthat helped respondent distract them from thinking about their illness.

**c) Distancing**

Some respondents, however, used denial as a coping strategy to distance themselves from the stress associated with their illness and some preferred Isolation

In summary, the emotion-based coping strategies used by respondents to distract themselves from the stresses associated with managing BD, included spiritual or religious domains, as well as solitary activities that kept them feeling "focused and normal".

Although denial, isolation, and avoidance were used by some as coping strategies to distance themselves from stressful situations, others cited helping others and seeking support from friends, families, and support groups, as helpful in coping with their mental illness.

In the study, women adopted more coping strategies such as self-blame. Self-blame items involved criticizing and blaming oneself for things that happened. This could lead to guilty feeling and finally might end up in relapse.

Similar study was carried out by Kelly et al., to explore the coping strategies in depressed patients between both genders. Greater emotional reaction to depression with maladaptive coping was more for women and men and women showed additional relationships between greater perceived control over depression and more adaptive coping techniques as well as between perception of consequences of depression and problem solving [10].

A study carried out by Megan et al., to examine sex differences in the use of coping strategies and their relationship to depression, the results demonstrated that women who used less positive

reframing had higher levels of depressive symptoms compared to men irrespective of their use of more or less positive reframing [10].

It has been hypothesized that differences in the way women cope with stress could be related to their higher levels of psychological distress, symptoms of depression with men and may be related to sex differences in the prevalence of depression. Indeed, several studies have found that women tend to use coping strategies that are aimed at changing their emotional responses to a situation, whereas men use more problem- focused or instrumental methods of handling stressful experiences [17].

Another study was conducted by Gerber et al., to investigate coping strategies in men and women in depressive disorder patients. The analyses revealed that compared to men, women display higher interpersonal sensitivity and use internalized shaming coping strategies [18]. A similar study was carried out by Howerton et al., [17] in Miami, Florida to examine sex differences in coping styles for depressed mood [19]. They examined the extent to which there were sex differences in 3 coping style types: problem focused, emotion focused, and avoidance focused [9]. And they further examined the extent to which sex differences in coping styles could be explained by sex differences in chronic strain; the extent to which sex differences in depressed mood could be explained by sex differences in coping style; and whether the effects of different coping style types on depressed mood varied by sex.

Results suggested somewhat complex relationships among sex, coping, chronic strain, and depression. No sex differences in the use of problem-focused coping were observed however, women more often used avoidance-focused techniques.

Although female respondents more often used emotion-oriented strategies compared to male respondents, such use did not prove to be fundamentally harmful for women. In fact, the effects of using emotion- focused strategies, such as the expression of feelings, reduced depressed mood for women, but not for men.

Another study was conducted by Nagase Y et al., [20] in Japanese population to assess coping strategies in depression. It was found that depression was associated positively with avoidant strategies but negatively with problem solving strategies indicates that individual stress- coping strategies have their own significance with respect to depression, and may be utilized in establishing an evidence-based cognitive behavioral approach to depressive patients [20].

A study was carried out in Spain to assess gender difference in coping strategies to stress and depression. It was found that women scoredsignificantly higher than men in emotional and avoidance coping styles, while scored lower in rational and detachment coping styles. Although the magnitude of differences is moderate to small, several investigators have found that men made more frequent use of instrumental coping and women were more likely to use emotion-focused coping [21].

Another similar study was conducted in India by Wesley MS et al., [22] to assess interepisodic functioning, coping strategies in patients of bipolar. It was found that better functioning group had better scores on active coping, positive reframing, planning, and acceptance coping dimensions. Problem focused coping was found to be an effective coping style in improving mood and self-esteem; thus were found to improve functioning.

## MATERIALS AND METHODS

**Source of Data**

The study included the patients who came for follow up in psychiatry OPD in DMC & Hospital, Ludhiana Method of Collection of Data.

**Inclusion Criteria**

1. Patients meeting criteria of DSM 5 Bipolar Depressive Disorder
2. Age 18-55 years
3. HAM-D score >20
4. Willing to give informed consent

**Exclusion Criteria**

1. Psychiatric co-morbidity
2. Age <18 years, >55years
3. Substance use (except tobacco)
4. Intellectual disability

**Sample Size**

The study of Bridi K et al., [23] observed that median(Interquartile range) of active coping, planning, positive reframing, humor, denial, self-distraction, behavioral engagement in cases was 6(5-7), 6(5-7), 6(5-7), 4(3-5), 4(4-6), 5(4-6), 3(3-5) respectively and in controls was 7(6-8), 7(6-8), 7(6-8), 5(4-6), 3(2-4), 4(3-5), 2(2-4) respectively. Taking these values as reference and sample size ratio as 2:1, the minimum required sample size with 95% power of study and 5% level of significance is 43 patients for control and 86 patients for cases. To reduce margin of error, total sample size taken is 150 (100 cases and 50 controls).

Formula used is:-

For calculating mean from median and range(The reference for this calculation (SD= IQR/1.35) is the Cochrane handbook of SR of interventions and

assuming that the data have a normal distribution mean will equal to median.)

Mean=median

Standard deviation=Interquartile range/1.35

For comparing mean of two groups

$$N>=(k+1)/k*\frac{(\text{standard deviation})^2 *(Z_\alpha + Z_\beta)^2}{(\text{mean difference})^2}$$

Where, $Z_\alpha$ is value of Z at two sided alpha error of 5% =1.96

$Z_\beta$ is value of Z at power of 95%=1.645

mean difference is difference in mean values of two groups

Pooled standard deviation= $Sqrt(((S_1)^2+(S_2)^2)/2)$

k is sample size ratio=2:1

N is sample size.

**Calculations:**

1) Active coping

Standard deviation of active coping in case

Stdev=(2/1.35)=1.48

Standard deviation of active coping in control

Stdev=(2/1.35)=1.48

Pooled standard deviation=$sqrt(((1.48)^2+(1.48)^2)/2)$

=1.48

Calculation of sample size

$$N>=\frac{(3/2)(1.48)^2 *(1.96+1.645)^2}{(1)^2}$$

>=42.78=43(approx.)

2) Planning

Standard deviation of planning in case

Stdev=(2/1.35)=1.48

Standard deviation of planning in control

Stdev=(2/1.35)=1.48

Pooled standard deviation=$sqrt(((1.48)^2+(1.48)^2)/2)$

=1.48

Calculation of sample size

$$N>=\frac{(3/2)(1.48)^2 *(1.96+1.645)^2}{(1)^2}$$

>=42.78=43(approx.)

3) Positive reframing

Standard deviation of positive reframing in case

Stdev=(2/1.35)=1.48

Standard deviation of positive reframing in control

Stdev=(2/1.35)=1.48

Pooled standard deviation=$sqrt(((1.48)^2+(1.48)^2)/2)$

=1.48

Calculation of sample size

$$N>=\frac{(3/2)(1.48)^2 *(1.96+1.645)^2}{(1)^2}$$

>=42.78=43(approx.)

4) Humor

Standard deviation of humor in case

Stdev=(2/1.35)=1.48

Standard deviation of humor in control

Stdev=(2/1.35)=1.48

Pooled standard deviation=$sqrt(((1.48)^2+(1.48)^2)/2)$

=1.48

Calculation of sample size

$$N>=\frac{(3/2)(1.48)^2 *(1.96+1.645)^2}{(1)^2}$$

>=42.78=43(approx.)

5) Denial

Standard deviation of denial in case

Stdev=(2/1.35)=1.48

Standard deviation of denial in control

Stdev=(2/1.35)=1.48

Pooled standard deviation=$sqrt(((1.48)^2+(1.48)^2)/2)$

=1.48

Calculation of sample size

$$N>=\frac{(3/2)(1.48)^2 *(1.96+1.645)^2}{(1)^2}$$

>=42.78=43(approx.)

6) Self-distraction

Standard deviation of self-distraction in case

Stdev=(2/1.35)=1.48

Standard deviation of self-distraction in control

Stdev=(2/1.35)=1.48

Pooled standard deviation=sqrt(((1.48)$^2$+(1.48)$^2$)/2)

=1.48

Calculation of sample size

$$N>=\frac{(3/2)(1.48)^2 *(1.96+1.645)^2}{(1)^2}$$

>=42.78=43(approx.)

7) Behavioral engagement

Standard deviation of behavioral engagement in case

Stdev=(2/1.35)=1.48

Standard deviation of behavioral engagement in control

Stdev=(2/1.35)=1.48

Pooled standard deviation=sqrt(((1.48)$^2$+(1.48)$^2$)/2)

=1.48

Calculation of sample size

$$N>=\frac{(3/2)(1.48)^2 *(1.96+1.645)^2}{(1)^2}$$

>=42.78=43(approx.)

Patients who met the required inclusion and exclusion criteria for the study, and were willing to give informed consent, were recruited. They were explained about the study.

This case-control study was conducted in Psychiatry OPD of Dayanand Medical College & Hospital, Ludhiana.

The sample population was divided into 3 groups: Males with bipolar depression (n=50), Females with Bipolar Depression (n=50) and Healthy Control (50), age matched.

Sociodemographic detail such as age, gender, education, occupation, and marital status were filled in Performa containing basic information about subjects.

The subjects were evaluated on their symptoms by using HAM-D scale [24], coping strategies by using Brief Cope Questionnaire [25], Emotional Intelligence By Mangal Emotional Intelligence Inventory [26].

The scales were evaluated by the principal investigator by explaining the patient in their own language.

**TOOLS**

**SOCIO-DEMOGRAPHIC PROFORMA:**

**S.NO:-**

**NAME**:-

**AGE:** **SEX**:-

**CR.NO/Adm no/MRD.NO**:-**Education-**

a) Illiterate b) Upto Matriculation

c) Higher secondary d) Graduate/Post-Graduate

**Occupation-**

a) Housewife b) Semi-skilled/skilled worker

c) Unemployed d) Other.

**Marital Status**

Single/ Married/ Widowed/Divorced/ Separated

**Address- Contact no**

**HAM- D**

Rating Clinician-rated Administration time 20–30 minutes.

The HAM-D questionnaire was introduced Max Hamilton in late 1950s at Leeds University; this score was originally designed for assessing the performance of the 1st group of antidepressants. This was designed for use by healthcare professionals at the time of clinical interview of already diagnosed patient with depression. HDI demonstrated high levels of reliability (rα = 0.91 to 0.94, rtt = 0.95 to 0.96).

Main purpose To assess severity of, and change in, depressive symptoms Population Adults Commentary The HDRS (also known as the Ham-D) is the most widely used clinician-administered depression assessment scale.It includes 4 items intended to subtype the depression, but which are sometimes, incorrectly, used to rate severity. Scoring Method is: a score of 0–7 is generally accepted to be within the normal range (or in clinical remission), while a score of 20 or higher (indicating at least moderate severity).

**BRIEF COPE**

The Brief COPE is an abbreviated version of the COPE Inventory given by Carver in 1997 [27]. It was initially validated on a 168 participant community sample affected by hurricane. It assesses broad range of coping responses among adults for all diseases. It is a self-report questionnaire. The instrument efficiently measures 14 coping mechanisms with 28 items (two items for each coping process). Scoring-Responses are scored on a 4-point scale that indicates how much the respondent has used the coping strategy depicted by the item:

1 I haven't been doing this at all.
2. I've been doing this a little bit.
3. I've been doing this a medium amount.4-I've been doing this a lot.

The COPE assesses some strategies that, in past research on coping, have been found to be adaptive (active coping, use of emotional support, use of instrumental support, positive reframing, planning, humor, acceptance, and religion), and some strategies that have been found to bemaladaptive (self-distraction, denial, substance use, behavioral disengagement, venting, and self-blame). Brief COPE was developed on the basis of item reduction procedures, it probably shares in the validity previously established for the longer measure.

**EMOTIONAL INTELLIGENCE**

In the present investigation, for measuring emotional intelligence of participants, Inventory for emotional intelligence by Dr. S. K. Mangal and Mrs. Shubhra Mangal was used. It consists of 100 items. It is a self-report questionnaire. It consists four components each having 25 items. The participants were required to respond either yes or no. This inventory measuring emotional intelligence on 4 areas namely: a) Intra-personal awareness b) Inter-personal awareness c) Intra-personal management d) Interpersonal management. There are hundred items in this tool and for each statement there are two possible responses either yes or no, and the respondent has to mark on either of these two. A score of one mark is provided for the response indicating the presence of emotional intelligence and zero for the absence of emotional intelligence and these scores provided according to the below scoring. Classification of Emotional Intelligence according to different categories.

The reliability of this inventory was proven via "split-half method" (correlation co-efficient = 0.89), "K-R Formula method" (correlation co-efficient = 0.90), and "Test-Retest" (correlation co-efficient = 0.92). Validity was established by adopting two different approaches: factorial or criterion-related approach.

| No. of Items | Mode of Response | Score |
|---|---|---|
| (where "**Yes**" response shows presence of intelligence) | | |
| 6, 18, 19, 20, 23to25, 27to29, 31, 41to44, 51to56, 58to68, 70, 71, | "YES" | 1 |
| 73to76, 79to82, 84, 88to90, 96, 99 | "NO" | 0 |
| (where "**No**" response shows presence of intelligence) | | |
| 1to5, 7to17, 21, 22, 26, 30, 32to40, 45to50, 57, 69, 72, 77, 78, 83, | "NO" | 1 |
| 85to87, 91to95, 97, 98, 100 | "YES" | 0 |

| Categories | Description | Range of scores | |
|---|---|---|---|
| | | Female | Male |
| A | Very Good | 88 & above | 90 & above |
| B | Good | 75 - 87 | 77 - 89 |
| C | Average | 61 - 74 | 63 - 76 |
| D | Poor | 48 - 60 | 49 - 62 |
| E | Very Poor | 47 & below | 48 & below |

**OUTCOME MEASURES**

- HAM-D score
- Coping strategies
- Emotional intelligence

**ETHICAL CONSIDERATION**:

Ethical clearance was obtained from the Institutional Ethical Committee, prior to the start of the study

- Written informed consent was taken from all study participants
- Confidentiality and privacy was ensured at all stages.

**Statistical Analysis**

The presentation of the Categorical variables was done in the form of number and percentage (%). On the other hand, the quantitative data were presented as the means ± SD and as median with 25th and 75th percentiles (interquartile range). The data normality was checked by using Kolmogorov-Smirnov test. The cases in which the data was not normal, we used non parametric tests. The following statistical tests were applied for the results:

1. The comparison of the variables which were quantitative and not normally distributed in nature were analyzed using Mann-Whitney Test (for cases and controls) and Kruskal Wallis test (for more than two groups) and variables which were quantitative and normally distributed in nature were analyzed using ANOVA (for more than two groups) and Independent t test (for two groups). Post hoc comparison was done using Bonferroni correction for normally distributed data and Dunn's multiple pairwise comparison test was carried out for non-normally distributed data.
2. The comparison of the variables which were qualitative in nature was analyzed using Chi-Square test. If any cell had an expected value of less than 5 then Fisher's exact test was used.

The data entry was done in the Microsoft EXCEL spreadsheet and the final analysis was done with the use of Statistical Package for Social Sciences (SPSS) software, IBM manufacturer, Chicago, USA, version 21.0.

For statistical significance, p value of less than 0.05 was considered statistically significant.

## RESULTS AND OBSERVATIONS

A cross-sectional study was conducted in psychiatry OPD in DMC & Hospital, Ludhiana. 50 males and 50 females of age 18-55 years meeting criteria of DSM 5 Bipolar Depressive Disorder with HAM-D score <20 and 50 healthy control age matched were included in the study. Socio demographic characteristics of each study subject was recorded and subjects were evaluated on their symptoms by using HAM-D scale, coping strategies by using Brief Cope Questionnaire, Emotional Intelligence By Mangal Emotional Intelligence Inventory and results are as follows.

**Table 1: Comparison of demographic and clinical characteristics between cases and controls**

| Demographic and clinical characteristics | Cases(n=100) | Controls(n=50) | P value |
|---|---|---|---|
| **Age(years)** | | | |
| 18-20 | 2 (2%) | 3 (6%) | 0.485† |
| 21-30 | 36 (36%) | 13 (26%) | |
| 31-40 | 26 (26%) | 16 (32%) | |
| 41-50 | 25 (25%) | 14 (28%) | |
| 51-55 | 11 (11%) | 4 (8%) | |
| Mean ± SD | 36.37 ± 10.32 | 36.06 ± 10.1 | 0.897* |
| Median(25th-75th percentile) | 36(27.75-46) | 37(27-44.75) | |
| Range | 18-55 | 18-53 | |
| **Gender** | | | |
| Female | 50 (50%) | 25 (50%) | 1‡ |
| Male | 50 (50%) | 25 (50%) | |
| **Education** | | | |
| Uneducated | 2 (2%) | 2 (4%) | 0.278† |
| Primary | 14 (14%) | 3 (6%) | |
| Matriculation | 28 (28%) | 18 (36%) | |
| Higher Secondary | 33 (33%) | 20 (40%) | |
| Graduate | 23 (23%) | 7 (14%) | |
| **Type of family** | | | |
| Joint | 67 (67%) | 34 (68%) | 0.902‡ |
| Nuclear | 33 (33%) | 16 (32%) | |
| **Area of residence** | | | |
| Rural | 40 (40%) | 22 (44%) | 0.639‡ |
| Urban | 60 (60%) | 28 (56%) | |

*Mann Whitney test, † Fisher's exact test, ‡ Chi square test

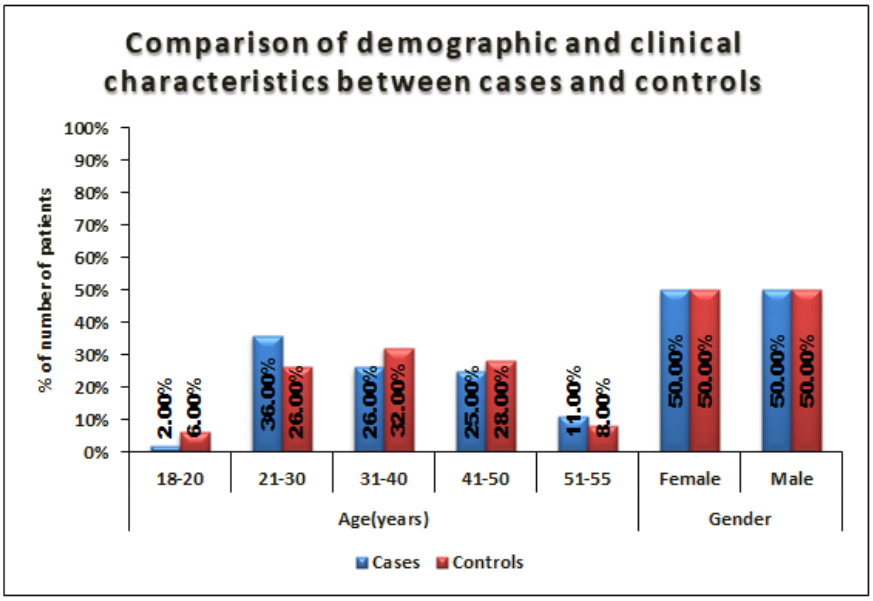


**Figure 1.1: Comparison of demographic and clinical characteristics between cases and controls**

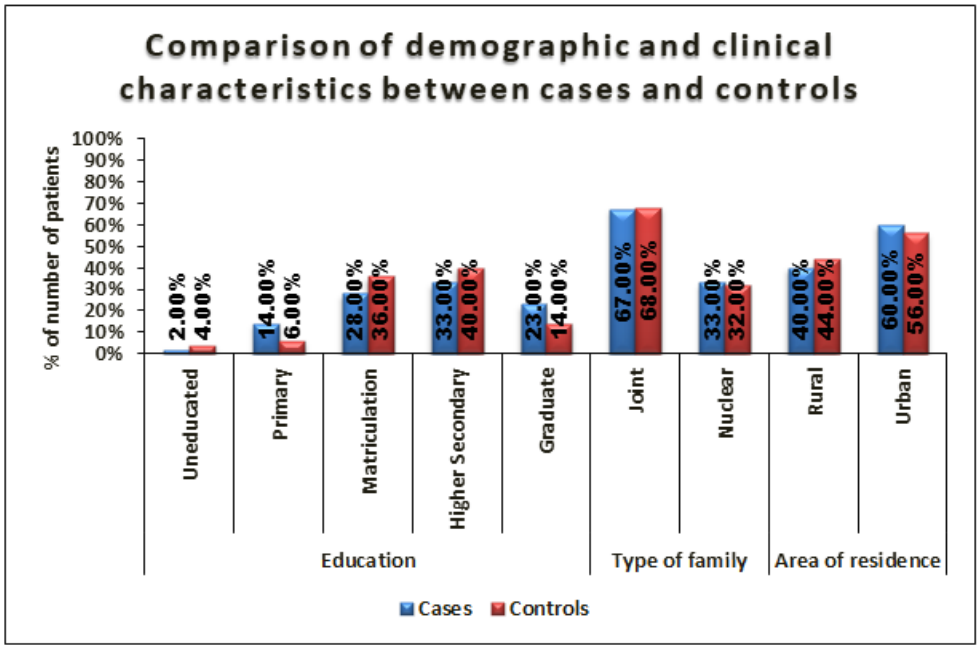


**Figure 1.2: Comparison of demographic and clinical characteristics between cases and controls**

Distribution of age(years), gender, education, type of family, area of residence was comparable between cases and controls. (p value>.05). It is shown in table 1, figure 1.1 and 1.2.

**Table 2: Comparison of age (years) between cases-female, cases-male and controls**

| Age(years) | Cases-female(n=50) | Cases-male(n=50) | Controls(n=50) | P value |
|---|---|---|---|---|
| 18-20 | 1 (2%) | 1 (2%) | 3 (6%) | 0.847† |
| 21-30 | 18 (36%) | 18 (36%) | 13 (26%) | C(f) vs C(m):0.912† |
| 31-40 | 14 (28%) | 12 (24%) | 16 (32%) | C(f) vs C:0.757† |
| 41-50 | 13 (26%) | 12 (24%) | 14 (28%) | C(m) vs C:0.522† |
| 51-55 | 4 (8%) | 7 (14%) | 4 (8%) | |
| Mean ± SD | 35.86 ± 10.55 | 36.88 ± 10.17 | 36.06 ± 10.1 | 0.826¶ |
| Median(25th-75th percentile) | 36(26-46) | 35.5(28.25-45) | 37(27-44.75) | C(f) vs C(m):0.545 |
| Range | 18-55 | 18-55 | 18-53 | C(f) vs C:0.849 |
| | | | | C(m) vs C:0.678 |

**† Fisher's exact test, ¶ Kruskal Wallis test**
**C(f) Cases-female, C(m) Cases-male, C-Controls**

Distribution of age (years) was comparable between cases-female, cases-male and controls. (p value>.05). It is shown in Table-2.

**Table 3:-Comparison of education between cases-female, cases-male and controls.**

| Education | Cases-female(n=50) | Cases-male(n=50) | Controls(n=50) | P value |
|---|---|---|---|---|
| Uneducated | 0 (0%) | 2 (4%) | 2 (4%) | 0.067† |
| Primary | 10 (20%) | 4 (8%) | 3 (6%) | C(f) vs C(m):0.051† |
| Matriculation | 18 (36%) | 10 (20%) | 18 (36%) | C(f) vs C:0.107† |
| Higher Secondary | 13 (26%) | 20 (40%) | 20 (40%) | C(m) vs C:0.317† |
| Graduate | 9 (18%) | 14 (28%) | 7 (14%) | |
| Total | 50 (100%) | 50 (100%) | 50 (100%) | |

**† Fisher's exact test**
**C(f) Cases-female, C(m) Cases-male, C-Controls**

Distribution of education was comparable between cases-female, cases-male and controls. (p value>.05). It is shown in Table-3.

**Table 4:-Comparison of type of family between cases-female, cases-male and controls.**

| Type of family | Cases-female(n=50) | Cases-male(n=50) | Controls(n=50) | P value |
|---|---|---|---|---|
| Joint | 34 (68%) | 33 (66%) | 34 (68%) | 0.97‡ |
| Nuclear | 16 (32%) | 17 (34%) | 16 (32%) | C(f) vs C(m):0.832‡ |
| Total | 50 (100%) | 50 (100%) | 50 (100%) | C(f) vs C:1‡ |
| | | | | C(m) vs C:0.832‡ |

**‡Chi square test**

**C(f) Cases-female, C(m) Cases-male, C-Controls**

Distribution of type of family was comparable between cases-female, cases-male and controls. (p value>.05)**.** It is shown in table 4.

**Table 5: Comparison of area of residence between cases-female, cases-male and controls**

| Area of residence | Cases-female(n=50) | Cases-male(n=50) | Controls(n=50) | P value |
|---|---|---|---|---|
| Rural | 20 (40%) | 20 (40%) | 22 (44%) | 0.896‡ |
| Urban | 30 (60%) | 30 (60%) | 28 (56%) | C(f) vs C(m):1‡ |
| Total | 50 (100%) | 50 (100%) | 50 (100%) | C(f) vs C:0.685‡ |
| | | | | C(m) vs C:0.685‡ |

**‡Chi square test**

**C(f) Cases-female, C(m) Cases-male, C-Controls**

Distribution of area of residence was comparable between cases-female, cases-male and controls. (p value>.05). It is shown in Table-5.

**Table 6: Comparison of HAM-D between cases-female, cases-male and controls**

| HAM-D | Cases-female(n=50) | Cases-male(n=50) | Controls(n=50) | P value |
|---|---|---|---|---|
| Mean ± SD | 14.72 ± 2.6 | 13.68 ± 2.44 | 4.76 ± 1.97 | <.0001¶ |
| Median(25th-75th percentile) | 15(13-16.75) | 13(12-15) | 5(3-7) | C(f) vs C(m):0.186 |
| Range | 11-19 | 11-19 | 2-8 | C(f) vs C:<.0001 |
| | | | | C(m) vs C:<.0001 |

**¶Kruskal Wallis test**

**C(f) Cases-female, C(m) Cases-male, C-Controls**

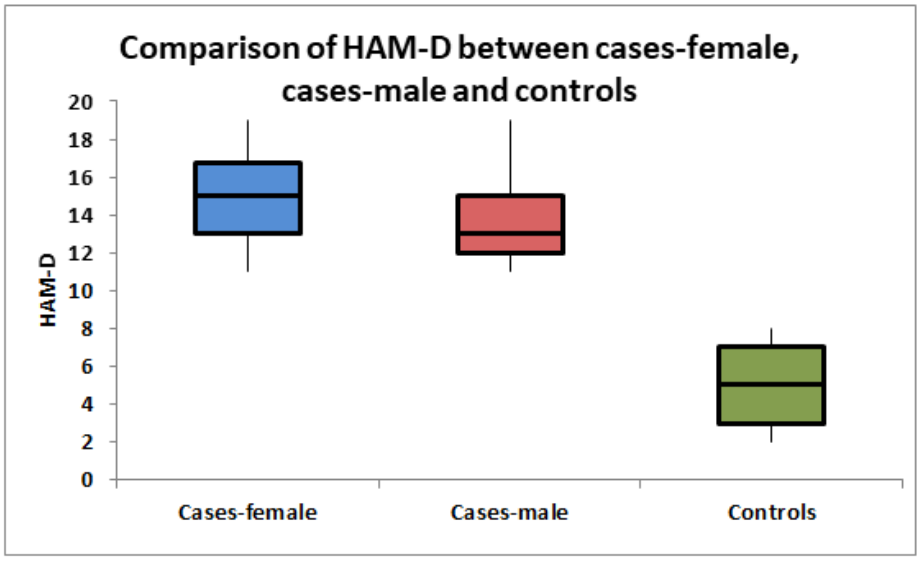


**Figure 2: Comparison of HAM-D between cases-female, cases-male and controls.(non-parametric variable, Box-whisker plot)**

Significant difference was seen in HAM-D between cases-female, cases-male and controls. (p value<.05). It is shown in table 6, figure 2.

**Table 7: Comparison of coping strategies between cases-female, cases-male and controls**

| Coping strategies | Cases-female(n=50) | Cases-male(n=50) | Controls(n=50) | P value |
|---|---|---|---|---|
| **Self distraction** | | | | |
| Mean ± SD | 2.6 ± 1.01 | 2.4 ± 0.99 | 2.64 ± 1.48 | 0.365¶ C(f) vs C(m):0.396 C(f) vs C:0.574 C(m) vs C:0.158 |
| Median(25th-75th percentile) | 3(2-3) | 3(2-3) | 4(1-4) | |
| Range | 1-4 | 1-4 | 1-4 | |
| **Active coping** | | | | |
| Mean ± SD | 2.38 ± 1.01 | 2.3 ± 0.93 | 2.96 ± 1.01 | 0.006¶ C(f) vs C(m):0.682 C(f) vs C:0.011 C(m) vs C:0.003 |
| Median(25th-75th percentile) | 3(1.25-3) | 2(2-3) | 2(2-4) | |
| Range | 1-4 | 1-4 | 2-4 | |
| **Denial** | | | | |
| Mean ± SD | 1.24 ± 0.43 | 1.34 ± 0.56 | 1.56 ± 0.5 | 0.003¶ C(f) vs C(m):0.447 C(f) vs C:0.001 C(m) vs C:0.013 |
| Median(25th-75th percentile) | 1(1-1) | 1(1-2) | 2(1-2) | |
| Range | 1-2 | 1-3 | 1-2 | |
| **Emotional support** | | | | |
| Mean ± SD | 2.54 ± 1.16 | 2.64 ± 1.08 | 2.16 ± 1.06 | 0.078¶ C(f) vs C(m):0.661 C(f) vs C:0.089 C(m) vs C:0.032 |
| Median(25th-75th percentile) | 2(2-4) | 2.5(2-4) | 3(1-3) | |
| Range | 1-4 | 1-4 | 1-4 | |
| **Venting** | | | | |
| Mean ± SD | 2.6 ± 1.21 | 2.64 ± 1.16 | 2.56 ± 0.5 | 0.911¶ C(f) vs C(m):0.886 C(f) vs C:0.779 C(m) vs C:0.672 |
| Median(25th-75th percentile) | 3(1.25-4) | 2.5(2-4) | 3(2-3) | |
| Range | 1-4 | 1-4 | 2-3 | |
| **Positive reframing** | | | | |
| Mean ± SD | 2.1 ± 0.91 | 2.12 ± 0.92 | 3.4 ± 0.61 | <.0001¶ C(f) vs C(m):0.913 C(f) vs C:<.0001 C(m) vs C:<.0001 |
| Median(25th-75th percentile) | 2(1-3) | 2(1-3) | 3(3-4) | |
| Range | 1-4 | 1-4 | 1-4 | |
| **Humor** | | | | |
| Mean ± SD | 1.96 ± 0.99 | 1.92 ± 0.94 | 2.96 ± 0.2 | <.0001¶ C(f) vs C(m):0.79 C(f) vs C:<.0001 C(m) vs C:<.0001 |
| Median(25th-75th percentile) | 2(1-2) | 2(1-2) | 3(3-3) | |
| Range | 1-4 | 1-4 | 2-3 | |
| **Religion** | | | | |
| Mean ± SD | 2.66 ± 0.98 | 2.8 ± 0.9 | 2.6 ± 0.57 | 0.399¶ C(f) vs C(m):0.451 C(f) vs C:0.549 C(m) vs C:0.176 |
| Median(25th-75th percentile) | 3(2-3) | 3(2-3) | 3(2-3) | |
| Range | 1-4 | 1-4 | 2-4 | |
| **Self blame** | | | | |
| Mean ± SD | 2 ± 1.12 | 2 ± 1.05 | 1.56 ± 0.5 | 0.187¶ C(f) vs C(m):0.84 C(f) vs C:0.14 C(m) vs C:0.093 |
| Median(25th-75th percentile) | 2(1-3) | 2(1-3) | 2(1-2) | |
| Range | 1-4 | 1-4 | 1-2 | |
| **Acceptance** | | | | |
| Mean ± SD | 3.02 ± 0.68 | 2.78 ± 0.58 | 2.52 ± 0.5 | 0.0007¶ C(f) vs C(m):0.083 C(f) vs C:0.0001 C(m) vs C:0.037 |
| Median(25th-75th percentile) | 3(3-3) | 3(2-3) | 3(2-3) | |
| Range | 2-4 | 2-4 | 2-3 | |
| **Planning** | | | | |
| Mean ± SD | 2.32 ± 1.02 | 2.42 ± 0.88 | 4 ± 0 | <.0001¶ C(f) vs C(m):0.824 C(f) vs C:<.0001 C(m) vs C:<.0001 |
| Median(25th-75th percentile) | 2(1-3) | 3(2-3) | 4(4-4) | |
| Range | 1-4 | 1-4 | 4-4 | |

**¶ Kruskal Wallis test**

**C(f) Cases-female, C(m) Cases-male, C-Controls**

No significant difference was seen in self distraction, emotional support, venting, religion and self blame and significant difference was seen in active coping, acceptance, denial, positive reframing, humor,

planning between cases-female, cases-male and controls. It is shown in table 7.

**Table 8: Comparison of emotional intelligence between cases-female, cases-male and controls**

| Emotional intelligence | Cases-female(n=50) | Cases-male(n=50) | Controls(n=50) | P value |
|---|---|---|---|---|
| Good | 3 (6%) | 0 (0%) | 12 (24%) | <.0001† C(f) vs C(m):<.0001† C(f) vs C:0.017† C(m) vs C:<.0001‡ |
| Average | 33 (66%) | 5 (10%) | 22 (44%) | |
| Poor | 14 (28%) | 34 (68%) | 14 (28%) | |
| Very poor | 0 (0%) | 11 (22%) | 2 (4%) | |
| Mean ± SD | 64.52 ± 6.33 | 54.44 ± 6.43 | 67.26 ± 9.6 | <.0001§ C(f) vs C(m):<.0001 C(f) vs C:0.074 C(m) vs C:<.0001 |
| Median(25th-75th percentile) | 64.5(60-68) | 55.5(49-58) | 67.5(61-73.75) | |
| Range | 52-82 | 42-69 | 43-84 | |

**†Fisher's exact test, ‡ Chi square test, § ANOVA**
**C(f) Cases-female, C(m) Cases-male, C-Controls**

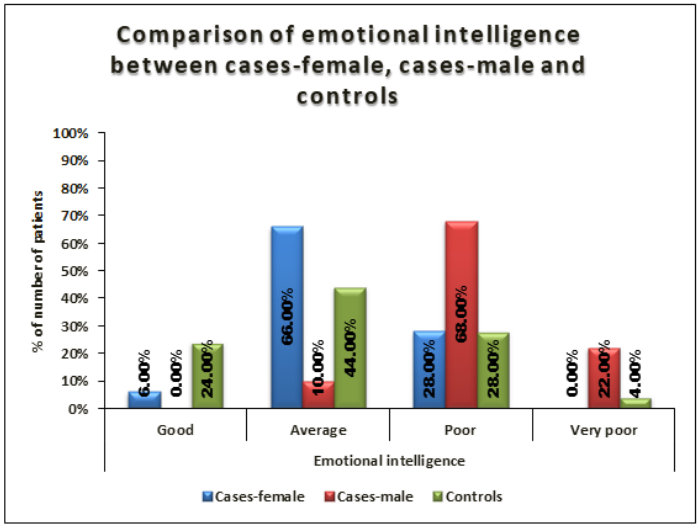


**Figure 3: Comparison of emotional intelligence between cases-female, cases-male and controls**

Significant difference was seen in emotional intelligence between cases-female, cases-male and controls. (p value<.05). It is shown in table 8, figure 3.

**Table 9:-Comparison of HAM-D between gender in controls.**

| HAM-D | Female(n=25) | Male(n=6) | Total | P value |
|---|---|---|---|---|
| Mean ± SD | 5.08 ± 2.1 | 4.5 ± 2.07 | 4.97 ± 2.07 | 0.216* |
| Median(25th-75th percentile) | 6(3-7) | 5(2.75-5.75) | 6(2.5-7) | |
| Range | 2-8 | 2-7 | 2-8 | |

***Mann Whitney test**

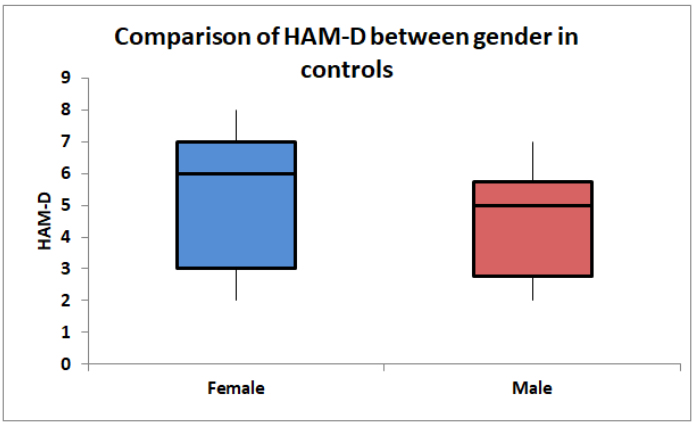


**Figure 4: Comparison of HAM-D between gender in controls.(non-parametric variable, Box-whisker plot)**

No significant difference was seen in HAM-D between gender in controls. (p value>.05). It is shown in Table 9, Figure 4.

**Table 10: Comparison of coping strategies between gender in controls**

| Coping strategies | Female(n=25) | Male(n=6) | Total | P value |
|---|---|---|---|---|
| **Self distraction** | | | | |
| Mean ± SD | 3.92 ± 0.28 | 1 ± 0 | 3.35 ± 1.2 | <.0001* |
| Median(25th-75th percentile) | 4(4-4) | 1(1-1) | 4(3.5-4) | |
| Range | 3-4 | 1-1 | 1-4 | |
| **Active coping** | | | | |
| Mean ± SD | 2.16 ± 0.55 | 4 ± 0 | 2.52 ± 0.89 | <.0001* |
| Median(25th-75th percentile) | 2(2-2) | 4(4-4) | 2(2-3) | |
| Range | 2-4 | 4-4 | 2-4 | |
| **Denial** | | | | |
| Mean ± SD | 2 ± 0 | 1 ± 0 | 1.81 ± 0.4 | <.0001* |
| Median(25th-75th percentile) | 2(2-2) | 1(1-1) | 2(2-2) | |
| Range | 2-2 | 1-1 | 1-2 | |
| **Emotional support** | | | | |
| Mean ± SD | 3.08 ± 0.28 | 1 ± 0 | 2.68 ± 0.87 | <.0001* |
| Median(25th-75th percentile) | 3(3-3) | 1(1-1) | 3(3-3) | |
| Range | 3-4 | 1-1 | 1-4 | |
| **Venting** | | | | |
| Mean ± SD | 3 ± 0 | 2 ± 0 | 2.81 ± 0.4 | <.0001* |
| Median(25th-75th percentile) | 3(3-3) | 2(2-2) | 3(3-3) | |
| Range | 3-3 | 2-2 | 2-3 | |
| **Positive reframing** | | | | |
| Mean ± SD | 2.92 ± 0.4 | 4 ± 0 | 3.13 ± 0.56 | <.0001* |
| Median(25th-75th percentile) | 3(3-3) | 4(4-4) | 3(3-3) | |
| Range | 1-3 | 4-4 | 1-4 | |
| **Humor** | | | | |
| Mean ± SD | 2.92 ± 0.28 | 3 ± 0 | 2.94 ± 0.25 | 0.153* |
| Median(25th-75th percentile) | 3(3-3) | 3(3-3) | 3(3-3) | |
| Range | 2-3 | 3-3 | 2-3 | |
| **Religion** | | | | |
| Mean ± SD | 3.08 ± 0.28 | 2 ± 0 | 2.87 ± 0.5 | <.0001* |
| Median(25th-75th percentile) | 3(3-3) | 2(2-2) | 3(3-3) | |
| Range | 3-4 | 2-2 | 2-4 | |
| **Self blame** | | | | |
| Mean ± SD | 2 ± 0 | 1 ± 0 | 1.81 ± 0.4 | <.0001* |
| Median(25th-75th percentile) | 2(2-2) | 1(1-1) | 2(2-2) | |
| Range | 2-2 | 1-1 | 1-2 | |
| **Planning** | | | | |
| Mean ± SD | 4 ± 0 | 4 ± 0 | 4 ± 0 | 1* |
| Median(25th-75th percentile) | 4(4-4) | 4(4-4) | 4(4-4) | |
| Range | 4-4 | 4-4 | 4-4 | |
| **Acceptance** | | | | |
| Mean ± SD | 2.92 ± 0.28 | 2 ± 0 | 2.74 ± 0.44 | <.0001* |
| Median(25th-75th percentile) | 3(3-3) | 2(2-2) | 3(2.5-3) | |
| Range | 2-3 | 2-2 | 2-3 | |

*** Mann Whitney test**

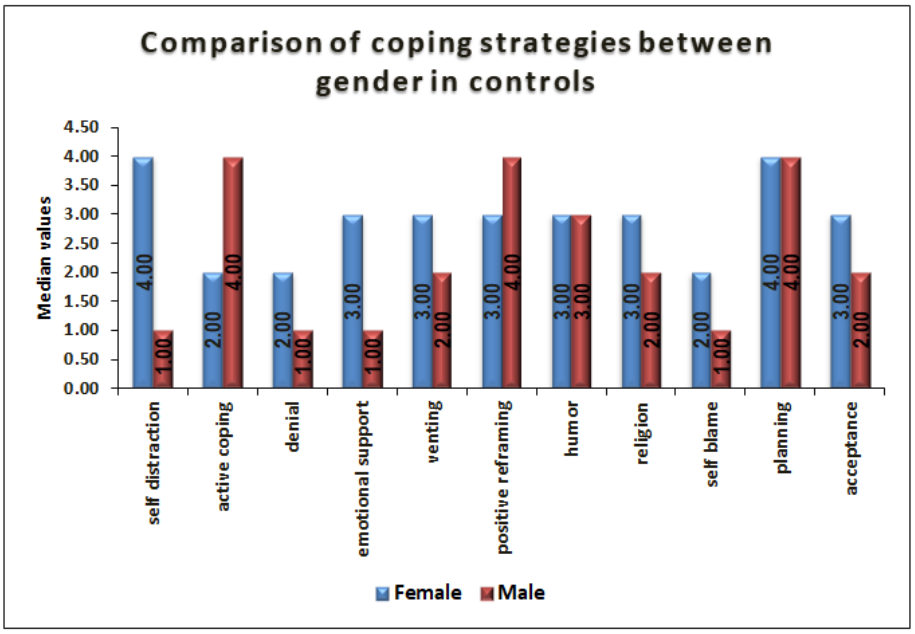


**Figure 5: Comparison of coping strategies between gender in controls (non-parametric variables)**

Significant difference was seen in self distraction, denial, emotional support, venting, religion, self blame, acceptance, active coping, positive reframing and no significant difference was seen in humor and planning between gender in controls. It is shown in Table 10, Figure 5.

**Table 11: Comparison of emotional intelligence between gender in controls**

| Emotional intelligence | Female | Male | Total | P value |
|---|---|---|---|---|
| Good | 11 (44%) | 1 (4%) | 12 (24%) | 0.0002† |
| Average | 12 (48%) | 10 (40%) | 22 (44%) | |
| Poor | 2 (8%) | 12 (48%) | 14 (28%) | |
| Very poor | 0 (0%) | 2 (8%) | 2 (4%) | |
| Mean ± SD | 72.28 ± 7.61 | 58.5 ± 10.67 | 69.61 ± 9.8 | <.0001¶ |
| Median(25th-75th percentile) | 72(67-80) | 61.5(51.25-66.5) | 68(65-78.5) | |
| Range | 57-84 | 43-69 | 43-84 | |

**¶Independent t test, † Fisher's exact test**

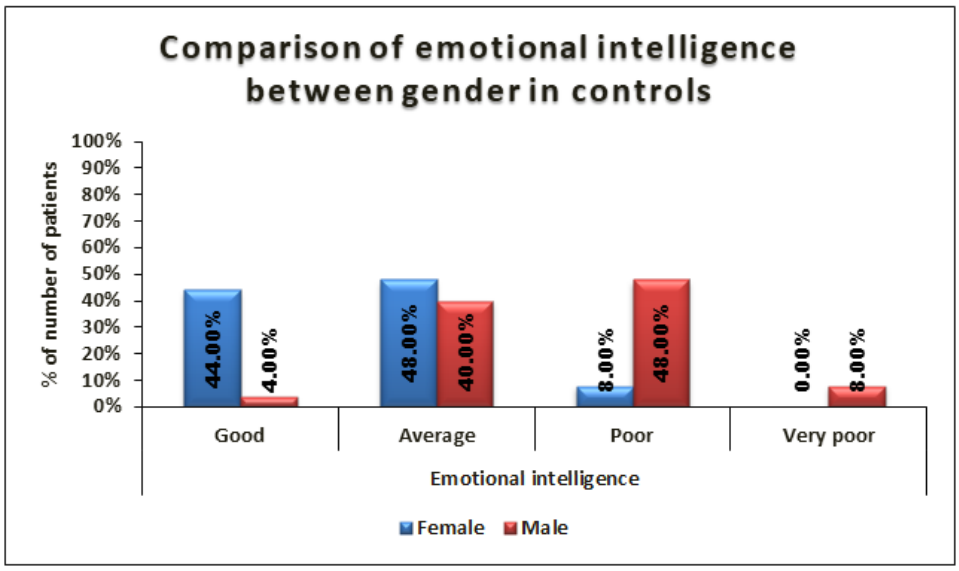


**Figure 6: Comparison of emotional intelligence between gender in controls**

Significant difference was seen in emotional intelligence between gender in controls. (p value<.05). It is shown in Table 11, Figure 6.

## DISCUSSION

The present study was a cross-sectional study on 100 patients of BPD where we determined the gender difference in terms of depression, emotional intelligence, and coping strategies.

We matched the patients with 50 controls who were age and gender matched. We found that females had better emotional intelligence than males but similar depression scores and coping strategies among BPD patients. Even among controls, females had better emotional intelligence and coping strategies scores than males.

Emotional intelligence is a type of intelligence that includes evaluation of own emotions and that of others, the capability of relating to people and of discriminating between emotions, and thus utilizing it for guiding about thinking and actions of an individual. Emotional intelligence is specifically useful in education, psychology, human resource management for improving teamwork, building relationship at work, and the effect of emotion on taking decisions [28].

Patients with bipolar disorder demonstrate decreased emotion regulation. Such individuals tend to use more strategies of emotion regulation; however, they get less success as compared to healthy individuals [29].

Interestingly, we found that emotional intelligence of females was significantly higher than males (64.52 ± 6.33 vs. 54.44 ± 6.43, P<.0001). To an extent, it was comparable in females and normal control population (64.5 vs. 67.26, P=0.074); whereas, it was significantly lower in males than control population (54.44 ± 6.43 vs. 67.26 ± 9.6, P<.0001).

This shows that females preserve their emotional intelligence despite BPD. This may be because the emotional intelligence deals with managing and expressing one's emotions as well as social skills. Since females tend to be more sensitive, expressive, and perceptive and have greater empathy than male, so their emotional intelligence ought to be higher than that of males. This may be because of the society, which socializes the two genders differently. Since females tend to be more emotional and intimate in relationships as compared to males, so their emotional intelligence ought to be higher. Moreover, higher emotional intelligence among females can also be explained in terms of some of their personality characteristics [30].

Gender differences in patients with BD have not been examined previously as they have in other mental diseases (e.g., schizophrenia). One of the similar studies, as that of present study, conducted by Arowolo B et al., [28] found that there were no overall gender differences in the emotional intelligence of the patients with bipolar disorder. In a study by Chapela et al., [31] patients with bipolar disorder were compared with controls, and it was found that patients with bipolar disorder had lack of emotional intelligence in comparison to general population.

As observed in our study, the studies that evaluated gender differences in emotional intelligence among healthy individuals reported consistent findings as women had higher emotional intelligence than men in the studies by Mayer et al., [32] Day et al., [33] Gayathri et al., [34], Ranasinghe et al., [35], Meshkat et al., [36], Petrides et al., [37], and Joshi et al., [38] and Van Rooy et al., [39] Similar findings were reported in studies by Verma et al., [40] as it was found that females had higher scores with regard to empathy, social responsibilities and interpersonal relationships than males. All these traits help them to acquire more emotional intelligence as compared to males. Similarly, a meta-analysis conducted by Thomson et al., [41] found overall female advantage in emotional recognition. Fischer et al., [42] found that females outnumbered males at self-awareness, self-regard, empathy, and being sociable.

On the contrary Shi et al., [43] and Zohrevand et al., [44] found that males had higher emotional intelligence than females. No gender difference was seen in the studies by Derntl et al., [45] and Myint et al., [46].

Further studies are required for better understanding the differences in emotion processing between men and women with bipolar disorder.

As per the NICE (National Institute for Health and Care Excellence, 2015) [47], persons having bipolar disorder had more depressive symptoms in comparison to symptoms of mania. Such individuals with syndromal or sub-syndromal depressive symptoms spend a substantial amount of time experiencing these symptoms. Patients having BD with depression, research experience extreme loss of interest in activities, and symptoms like weight loss or gain, insomnia, hypersomnia, psychomotor retardation, tiredness, and features like excessive guilt and suicidal tendency [48]. Johnson et al., [49] mentioned that depression is generally caused due to disturbed self-esteem among patients having bipolar disorder due to the negative perceptions of their impressions of other individual's assessment.

In our study, depression scores of either gender were similar (15 vs. 13, P=0.186), which was significantly higher than normal controls (HAM-D score 5) (P<.0001).

Similarly, study by Arowolo B et al., [28] reported that there was no significant difference in males and female patents with respect to depression. Hirschfeld [50] mentioned that in patients having bipolar disorder, the sub-syndromal depressive symptoms are present frequently, which affect social as well as occupational aspects of an individual's life.

In study done by Deshpande et al., [51] to find out the severity and disability among genders in depressive disorders it was seen that Mean HDRS score (Hamilton Depression Rating Scale) was much higher in females than males. However, our findings were inconsistent with the study done by Hildebrandt MG et al., [52] where no significant gender difference was seen the severity of depression. Another study done by Parker G et al., [53] showed females scored only marginally higher than males on depression severity measures.

This indicates that depression occurs equivalently in both genders. It must be stressed here that all demographic characters were similar among males and females' cases, annulling any confounding bias.

Among other studies, Qin X et al,, [54] found that in patients with major depressive disorder, there were gender differences in age and education ($P<0.05$). No difference was present in BMI among males and females. In the study by Sherchand O et al., there was higher prevalence of depression in women of age group 41-65 years than men of 41-65 years, women practicing religions other than Hinduism than men, women of nuclear family than men of nuclear family, married women than married men, women living sedentary life than men with sedentary life, women having endocrine disorders than men with endocrine disorders, women belonging to lower-middle and lower socioeconomic class than men of similar status ($P<0.05$).

To the best of our knowledge, there is scarcity of studies that assessed gender differences in patients with bipolar disorder in terms of depression scores.

Among the studies conducted on healthy population, studies done by Albert et al., [55], Swendeman D et el., [56], Paradiso S et al., [57] found that females scored higher on depressive symptoms than males.

In the present study, the coping strategies shown by the study population included self-distraction, active coping, denial, emotional support, venting, positive reframing, humor, religion, self-blame, acceptance, and planning. All the coping strategies scores were comparable among males and females ($P>0.05$). Among them self-distraction, emotional support, venting, religion, and self-blame had similar scores in comparison to controls ($P>0.05$), while active coping, denial, positive reframing, humor, acceptance, and planning had significantly lower values in comparison to controls ($P<0.05$).

Similarly in the study by Bridi et al., [23] coping strategies were compared between patients of bipolar disorder and that of controls, and found that there were significant differences between patients and controls ($p=0.003$) for adaptive coping ($p=0.003$); the controls had significantly higher scores for adaptive coping compared to patients. In patients with bipolar disorder, there were significantly lower active coping, planning, positive reframing, and humor than controls. Patients had significantly higher scores than healthy individuals for denial), self-distraction, and behavioral disengagement.

This indicates that BPD as a disease similarly affects coping strategies irrespective of gender. Among other studies, Arowolo et al., Frajo-Apor B et al., [58] and Bridi et al., [23] also found similar findings in cases and controls.

Sociodemographically, BPD cases had a mean age of $36.37 \pm 10.32$ with mostly educated population (metric and more 84%). They were from both rural (40%) and urban (60%) areas with joint (67%) or nuclear family (33%).

Among other studies conducted on patients with bipolar disorder, Bridi et al., [23] reported that mean age of the BPD patients was 47 years. In a similar study by Arowolo et al., mean age of the patients was 42.66 years and majority had Bachelor degree. In another study on bipolar patients by Frajo-Apor et al., [58] mean age of the patients was 45.9 years, and mean years of education was 13 years.

In the study by Wang Z et al., [59] mean age of the BD patients with mania and depression was 38.64 years and 36.34 years, respectively. Mean years of education in mania and depression groups was 9.37 and 10.17 years, respectively. Majority of the patients were from rural areas in both the depression group (74.29%) and the mania group (84.28%).

Overall, the sociodemographic characteristics shown in various studies corroborates with the present study.

The results of the present study and other discussed studies revealed that the female gender hold superiority over males in terms of emotional intelligence irrespective of the presence of bipolar depressive disease.

**LIMITATIONS OF THE STUDY**

- The limitations of the study are that it is specific to one geographic area. The results cannot be generalized beyond similar populations.

- Another limitation is that, as this was a cross-sectional study, no causal inferencecould be drawn from the results.
- Also, in this study Brief COPE version was used, which is adapted to European population, instead of Indian population. Thus, cultural differences are present. The lack of a validation study for this version of the scale is another important limitation.

**STRENGTHS OF THE STUDY**

- This study highlights the importance of coping strategies and emotional intelligence between both genders.
- The study was important as it showed that emotional intelligence and coping strategies had a greater role among genders and can become a strong predictor and a protective factor in determining the long-term prognosis and outcome in patients of bipolar depressive patients.
- There is a dearth of studies in India that evaluated the gender difference in emotional intelligence and coping strategies in individuals with bipolar disorder. Thus our study can act as a stepping zone for further larger studies to find out differences in Indian men and women with bipolar disorder.

## CONCLUSION

In conclusion, in patients with bipolar disorder, females had better emotional intelligence than males but similar depression scores and coping strategies.

Together with the interdependencies between the variables, the findings of the present study highlight particular interesting gender differences in the cognitive and affective domain, whereby emotional intelligence differs significantly in males and females

Considering the scarce information available on gender differences between emotional intelligence and coping strategies in bipolar depressive patients, further research is needed to better understand the role in outcomes.

The results of the present study and other studies revealed that individuals having bipolar disorder had limited emotional intelligence. Thus, focus of the psychological treatment given to individuals having bipolar disorder should be based on improving emotional intelligence, and preventing maladaptive strategies for communicating as well as dealing with emotion.

## SUMMARY

**INTRODUCTION**

Bipolar Affective disorders make up an important category of psychiatric illness. These patients encounter significant life adversity, which has contributed to these being one of the leading causes of disability. Emotional Intelligence is the ability of an individual to understand one's own and other's emotions and feelings and usethis knowledge in coping with situations. Coping abilities of individuals determine the vulnerability to stressful life events, which is an important factor influencing the risk for relapse. There is a paucity of research on the emotional intelligence of BD patients and the coping strategies used by them in self-managing their chronic illness.

**Aims and objectives**

To compare emotional intelligence and coping strategies among both males and females of bipolar depressive disorder.

## MATERIALS AND METHODS

This cross-sectional study was conducted on stable patients who came for follow-up in Psychiatry OPD of DMC & H, Ludhiana. A total of 150 subjects were included. The sample was divided into 3 groups: Females with Bipolar depression (n=50), Males with Bipolar Depression (n=50), Healthy controls (n=50). The subjects were evaluated for emotional intelligence, symptoms via HAM-D scale and their coping strategies by using the Brief Cope Questionnaire.

**Statistical Analysis**

The data entry was done in the Microsoft EXCEL spreadsheet and the final analysis was done with the use of Statistical Package for Social Sciences (SPSS) software, IBM manufacturer, Chicago, USA, version 21.0. For statistical significance, p value of less than 0.05 was considered statistically significant.

## RESULTS

In cases of BPD, emotional intelligence of females was significantly higher than males (64.52 ± 6.33 vs. 54.44 ± 6.43, P<.0001). To an extent, it was comparable in females and normal control population (64.5 vs. 67.26, P=0.074); whereas, it was significantly lower in males than control population (54.44 ± 6.43 vs. 67.26 ± 9.6, P<.0001). Depression scores of either gender were similar (15 vs. 13, P=0.186), which was significantly higher than normal controls (HAM-D score 5) (P<.0001). All the coping strategies scores were comparable among males and females (P>0.05). In the coping strategies, self-distraction, emotional support, venting, religion, and self-blame had similar scores in comparison to controls (P>0.05). Active coping, denial, positive reframing, humor, acceptance, and planning had significantly lower values in comparison to controls (P<0.05).

## CONCLUSION

To conclude, in patients with bipolar disorder, females have better emotional intelligence than males but similar depression scores and coping strategies.

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