



A CROSS-SECTIONAL STUDY OF EGO-DEFENCE MECHANISMS AMONG THE MEDICAL STUDENTS.

Psychology

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ABSTRACT

Background: Ego defence mechanisms (or factors), defined by Freud as the unconscious mental process used by the ego to reduce conflict between the id and superego, are a reflection of how an individual deals with conflict and stress in other words anxiety. This study assesses the prevalence of various ego defence mechanisms used by medical students of Mumbai, which has higher stress and anxiety levels than the general population of India.

Methods: A questionnaire-based cross-sectional study was conducted on 700 students from four major medical colleges of Mumbai over 4 weeks. Ego defence mechanisms were assessed using the Defence Style Questionnaire (DSQ-40) individually and as grouped under Mature, Immature, and Neurotic factors.

Results: Lower mean scores of Immature defence mechanisms (4.78) were identified than those for Neurotic (5.62) and Mature (5.60) mechanisms. Immature mechanisms were more commonly used by males whereas females used more Neurotic mechanisms than males. Neurotic and Immature defences were significantly more prevalent in first and second-year students. Mature mechanisms were significantly higher in students enrolled in Government colleges than other private institutions ($p < 0.05$).

Conclusions: Immature defence mechanisms were less commonly used than Neurotic and Mature mechanisms. The greater use of Neurotic defences may reflect greater stress levels than the general population. The use of these mechanisms was associated with the female gender.

KEYWORDS

BACKGROUND

Ego defence mechanisms (or factors) were defined for the first time by Sigmund Freud as the unconscious mental process used by the ego to reduce the conflict between the id and the superego^[1]. They reflect how an individual deals with conflict and stress, and this concept is recognized by the DSM-IV as axes for future studies^[2]. Ego defence mechanisms have been thought to act as one set of mediators in the stress-illness relationship^[3]. The 20 defence mechanisms identified by the Diagnostic and Statistical Manual (DSM) have been classified by Andrews^[4] into (a) four mature: sublimation, humour, anticipation and suppression; (b) four neurotic: undoing, pseudo-altruism, idealization, reaction formation; (c) twelve immature: projection, passive aggression, acting out, isolation, devaluation, autistic fantasy, denial, displacement, dissociation, splitting, rationalization and somatization. Vaillants' Hierarchy of Defences states that mature defence mechanisms are associated with better adaptive functioning and health, as opposed to the immature defence which is correlated negatively with measures of adaptive adult functioning. Interestingly, neurotic defence mechanisms, despite being correlated with high levels of distress and impairment, have been seen to be protective in cognitive and affective awareness of conflicts, when compared to immature defences^[5,6]. Many studies have shown the association between individual defence mechanisms arising as a result of anxiety, and levels of adult functioning^[7-12].

The findings have been significantly consistent in supporting the hierarchy of defences, suggesting that instruments that could readily yield an accurate assessment of defensive functioning would prove clinically useful in identifying characteristic personality traits. It is already widely accepted that medical students and physicians exhibit some specific personality characteristics, which Shaw et al^[13] suggest is due to the interaction of inherent personality patterns and specific environmental influences and stresses of medical school. Perceived medical school stress has been linked to clinically significant mental stress, which subsequently leads to mental health concerns such as anxiety and depression^[14]. More than 90% of the medical students have admitted being stressed at one time or another, with final year students showing a greater tendency than students of other years. Results from Indian studies have documented that 60-70% of these students suffer from anxiety and depression. With a prevalence of 35% reported in the general population, these statistics establish a greater stress level among medical students. Numerous studies have reported the prevalence of ego defence mechanisms used by medical students as a

reaction to anxiety and depression. Our study aims to identify the prevalence of various ego defence mechanisms used by medical students of Mumbai, it serves to highlight the various defence mechanisms commonly used by the medical students who happened to have greater stress levels, based on published literature, than the general population. The data collected would aid in identifying the subset of medical students more likely to employ immature and neurotic defence mechanisms, which would then serve as a target for medical practitioners for teaching interventions, mental health-promoting strategies, and various awareness programs. The goal of these interventional programs would be to assist individuals in acquiring greater insight by bringing their unconscious behaviour to consciousness and assisting them in understanding the cause of the behaviour. This could eventually encourage the adoption of mature defence mechanisms, and hence, a better quality of life, in coalition with social support systems, or psychotherapy.

Methods

This descriptive study was a self-administered questionnaire-based cross-sectional analysis conducted over four weeks.

Subjects

A simple random sample of 700 medical students was selected from 4 government and private institutes in Mumbai, Maharashtra. Students studying in Years 1 to 5 in the four major medical colleges of Mumbai were included, irrespective of their age, sex, ethnicity, religion, or comorbid conditions. Only those giving written consent were included in the study.

Methods Of Measurement

Research on ego defence mechanisms has increased in recent years with the development of different tools for measuring defence mechanisms. The Defence Style Questionnaire (DSQ) is the most widely used self-report instrument for defence measurement. This method has also been included in the American Psychiatric Association's Handbook of Psychiatric Measures (APA, 2000). Bond et al initially developed the DSQ as an 88-item self-reported questionnaire to assess conscious derivatives of defence mechanisms^[15], to identify characteristic styles conscious or unconscious of how people deal with conflict, based on the idea that people can accurately comment on their behaviour. In 1993, Andrews et al reorganized Vaillants' DSQ-67 into forty questions to make it short and manageable^[4]. He classified the 20 defence mechanisms per the DSM-III-R into (a)

four mature: sublimation, humour, anticipation and suppression; (b) four neurotic: undoing, pseudo-altruism, idealization, reaction formation; (c) twelve immature: projection, passive aggression, acting out, isolation, devaluation, autistic fantasy, denial, displacement, dissociation, splitting, rationalization and somatisation. The DSQ-40 is a reliable tool for assessing defence mechanisms, it comprises 40 items, used to derive scores on 20 defence mechanisms with two items for each defence mechanism, in a 9-point Likert format. The defence mechanisms are further grouped under three factors: a) Mature, b) Neurotic, and c) Immature style.

Data Analysis

The sample was grouped and compared based on gender, and year of medical education, with 1st and 2nd-year students comprising the "preclinical group" while 3rd, 4th and 5th-year students constituted the "clinical group". Defence mechanisms used by the students were also analysed to the 'type' of college they were enrolled in, i.e. private, or government medical colleges. The DSQ-40 was analysed in 2 ways as suggested by Andrews et al^[4]: (a) by pairing 2 items together under the label of a defence mechanism; and (b) by grouping the defence mechanisms under Mature, Neurotic, and Immature. Frequencies were calculated for categorical variables. The means ($\pm$ standard deviation) for individual and grouped defences were calculated. Respondents answered each of the 60 items on a 9 point Likert scale with anchors of one (not at all applicable to me) and nine (completely applicable to me). Scores for each defence were calculated by taking the mean of the two items representing the particular defence mechanism. Style scores were derived by taking the mean of the items belonging to each factor scale. Means were compared using the independent sample t-test. A p-value of less than 0.05 was considered to be statistically significant for all analyses. Only statistically significant results have been quoted in the current study.

Ethical Approval, Informed Consent And Patient Confidentiality

This study complied with the ethical norms. Participants who agreed to participate were explained the nature and the objectives of the study, and informed consent was formally obtained. The study was approved by the Ethical Review Committees. No reference to the participant's identity was made at any stage during data analysis or in the paper.

RESULTS

Among the total 700 participants the sample constituted 300 males (42.8%) and 400 females (57.2%). An adequate proportion was sampled from government (N = 430, 61.4%), and private (N = 270, 38.6%) medical colleges, as was from preclinical (N = 366, 52.3%) and clinical (N = 334, 47.7%) groups of students. The mean age of the sample population was 20.18 years (16 to 26 years). (table 1)

Table 1 : Demographic Data

Demographic details		Participants N (%)
Gender	Male	300 (42.8%)
	Female	400 (57.2%)
Institute	Government	430 (61.4%)
	Private	270 (38.6%)
Study year	Pre-clinical	366 (52.3%)
	Clinical	334 (47.7%)

Our study showed a lower mean score of immature ego defence mechanisms (4.78 ± 2.87) than that of mature (5.60 ± 2.56) and neurotic factors (5.62 ± 3.01). This was found to be statistically significant with a p-value < 0.05 using an independent sample t-test. The most common individual ego defence mechanisms used by medical students were Rationalization (6.43 ± 2.34), Anticipation (6.34 ± 2.44), and Undoing (5.93 ± 2.67). The least commonly used mechanisms were Devaluation (3.62 ± 2.52), Displacement (3.94 ± 2.87), and Denial (4.14 ± 2.79) (table 2).

Table 2 : Defence Mechanisms And Mean (SD)

Medical Students (N=700)		
Defence mechanism :		Mean (SD)
1 Mature	Mature defences	5.60 (2.56)
	Humour	5.74 (3.01)
	Sublimation	5.08 (2.87)
	Anticipation	6.34 (2.44)
	Suppression	5.24 (3.02)
2 Neurotic	Neurotic defences	5.62 (3.01)
	Undoing	5.93 (2.67)

3 Immature	Reaction formation	5.11 (2.63)
	Pseudo-altruism	5.82 (2.89)
	Idealisation	5.45 (2.91)
	Immature defences	4.78 (2.87)
	Projection	4.68 (2.87)
	Passive aggression	4.40 (2.91)
	Acting out	5.36 (2.77)
	Isolation	5.12 (2.58)
	Devaluation	3.62 (2.52)
	Autistic fantasy	4.58 (2.71)
	Denial	4.16 (2.79)
	Displacement	3.94 (2.87)
	Dissociation	4.71 (2.45)
	Splitting	5.32 (2.56)
	Rationalisation	6.43 (2.34)
	Somatisation	4.95 (2.73)

Gender Differences

There was no statistically significant difference in the prevalence of mature defence mechanisms amongst the two groups. However, the mean score of neurotic mechanisms was higher in females (5.72 vs 5.44 ; $p < 0.05$) than males. On comparison of individual defence mechanisms, it observed that Undoing, Idealization, and Somatization were significantly more prevalent in female students, whereas Isolation, Devaluation, Denial, and Dissociation were commonly used by the male population (Figure 1)

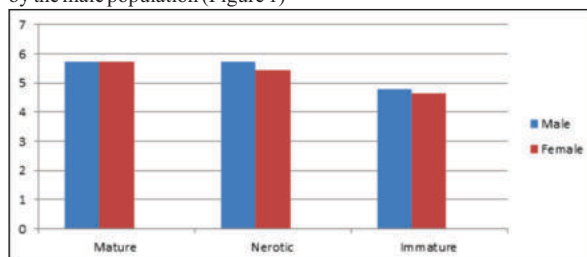


Figure 1: Gender and Defence mechanism (Mean, SD)

Year of Medical Education

As mentioned above students were classified into 2 groups based on the year of their medical education: (a) Preclinical years and (b) Clinical years. In a comparison of the two groups, the difference in mature factors failed to reach statistical significance. However, as hypothesized by it is, neurotic (5.85 vs 5.37 ; $p < 0.05$) and immature (4.88 vs 4.67 ; $p < 0.05$) defence mechanisms were more commonly used by students in the Preclinical than in the Clinical group. Individual analysis of the ego defence mechanisms revealed that Idealization (5.69 vs 5.20 ; $p < 0.05$), Reaction formation (5.35 vs 4.87 ; $p < 0.05$), Splitting (5.67 vs 4.93 ; $p < 0.05$), and Rationalization (6.59 vs 6.26 ; $p < 0.05$) were more prevalent in preclinical students, while Undoing (5.68 vs 5.16 ; $p < 0.05$) was the only defence mechanism significantly more prevalent amongst the clinical group. It is observed rationalization, which is an immature factor, to be more common among Pre-clinical year students than those in their clinical years (6.59 vs 6.26 , $p < 0.05$).

Medical Institutions

The mean score of mature defence mechanisms was significantly higher in government medical colleges (5.68 vs 5.48 ; $p < 0.05$) as compared to students enrolled in private medical colleges. No difference was found in the means of Neurotic and Immature defence mechanisms between the two groups. Anticipation (6.56 vs 6.01 ; $p < 0.05$) and Rationalization (6.54 vs 6.25 ; $p < 0.05$) were more common amongst students of government colleges while a larger proportion of students enrolled in private institutions used Devaluation (3.87 vs 3.47 ; $p < 0.05$) and Displacement (4.15 vs 3.81 ; $p < 0.05$) defence mechanisms (table 3).

Table 3 : Significant Results With Mean SD (p = <0.05)

Significant Results with Mean SD (p = <0.05)			
Defence Mechanism and Mean SD			
Immature	4.78 $\pm$ 2.87	Lower Mean SD value was found for immature than that of mature and neurotic	
Mature	5.60 $\pm$ 2.56		
Neurotic	5.62 $\pm$ 3.01		
Years of study	Pre clinical	Clinical	Value of p

Neurotic	5.85	5.37	< 0.05
Immature	4.88	4.67	
Institution type	Government	Private	Value of p
Mature	5.68	5.48	< 0.05

DISCUSSION

As per our knowledge, this may be the first of such studies from India, studying the prevalence of ego defence mechanisms used by medical students. The most prevalent defence mechanisms which are representative of the characteristics of the medical student population were: 1. Rationalization: Rationalization as defined by the DSM as, 'offering a socially acceptable and logical explanation for an act or decision produced by unconscious impulses', was the most commonly used ego defence mechanism by the participating medical students. It is observed that rationalization, which is an immature defence factor, is more common among first and second-year students than those in their clinical years. This finding may be explained by Evans study assessing the developmental aspects of psychological defences which indicates that defence mechanisms tend to mature with the advancement of age in adolescents to young adults^[16]. 2. Anticipation: Defined as 'anticipating consequences of possible future events and considering realistic, alternative responses or solutions', this is the second most common ego defence mechanism with a mean score of 6.34 ± 2.44 . A similar observation has been reported by La Cour^[24] in Danish medical students. It was found to be so independent of gender and year of education. However, there was a significant difference between private and government institutions, with Anticipation more commonly used by government college students. 3. Undoing: Before it was known that Undoing was a rarely used neurotic defence. However, it was observed to be the third most prevalent mechanism with a mean score of 5.93 ± 2.67 and was used more commonly by females and students of the clinical group. The questionnaire deals with the undoing of aggressive behaviour (e.g., Item 32: After I fight for my rights, I tend to apologize for my assertiveness). This finding may be explained by the 'hierarchical' nature of the extremely 'competitive' medical profession where "Undoing could be seen as a submissive, but adaptive, strategy in the field of competition. The 'fight for rights is not a suitable attitude in an authoritarian environment", La Cour^[16] aptly summarizes.

Clinical vs. Preclinical

In this study, it is observed a greater prevalence of immature and neurotic factors amongst students in their preclinical years. The general maturity of the psychological defence mechanisms is found to change over a lifespan^[5]. The differences in the prevalence of these defences may then be explained by the increased levels of stress and the overall psychological maturity in senior medical students. Chronically persistent high levels of stress coupled with greater exposure and the general maturation of the psyche may reflect the higher utilization of mature defence styles in this group of students. Among individual neurotic ego defence mechanisms, the mean scores of Undoing, Reaction formation and Idealization were significantly higher in students enrolled in their preclinical years. Splitting and Rationalization were the most prevalent immature defences in this group.

Gender Differences

Neurotic mechanisms were found to be more commonly used by females, whereas the use of immature defences was prevalent among male medical students. The positing of gender differences in defences based on classical psychoanalytic theory^[1] has generally been supported in prior investigations, which state that women tend to use internalizing defences such as Introversion, and men are more likely to employ externalizing ones^[17,18,19] such as Projection and Aggression^[20]. In our study, the mean score of Isolation was found to be significantly greater in males than females. This is consistent with findings made by Watson and Sinha^[17] and La Cour^[16]. Females are generally more emotionally labile as compared to their male counterparts who are better at splitting emotional components from their thoughts^[21], as shown by higher means for Isolation in men in our study. It is observed that female students used Somatization more commonly than male students; also reported by La Cour^[16]. These higher prevalence rates may be explained by women's greater psychological awareness of their bodily functions and reactions. Gender variations were also found in Undoing, Devaluation and Idealization defence mechanisms; however, these variations were inconsistent with those reported in prior studies. Andrews et al. did not find any differences in the ego defence mechanism used by the two genders. Studies by Watson, Sinha and La Cour, along with our results do not support his findings. It

supports the suggestion made by Watson and Sinha that specific norms of the DSQ-40 need to be reconstructed about gender.

Limitations

Ego defence mechanisms are unconscious processes^[1,6] and thus are not amenable to measurement using self-report questionnaires. Nonetheless, they manifest as 'typical behaviours' in response to stress, which an individual is capable of reporting even if they lack insight into the defensive function of that behaviour. Even though the DSQ is a self-reporting tool offering portability, affordability, and quantification, it faces significant challenges in the domains of reliability and validity by the intrinsic complexity of defence mechanisms. The DSQ-40, which has been used in many studies along with similar themes, remains under investigation. However, the DSQ, they conclude, remains a useful instrument for determining overall defensive functioning. After prior numerous revisions, recent efforts to improve the reliability, validity and congruency of the tool with the DSM-IV resulted in the development of the DSQ-60. However, preliminary results show that the psychometric properties of the scale remain inadequate for broad use recommendation. There is a lack of normative data on ego defence mechanisms used by the general population of Mumbai, Maharashtra. As our data was collected from four different medical colleges of Mumbai, it would be safe to say that our results can be generalized to represent the entire medical student population of Mumbai, if not the whole of India. The overrepresentation of women in the sample is a simple reflection of the fact that an increasing percentage of medical students worldwide are female. This highlights the importance of identifying the differences in psychological defence mechanisms used by the two gender groups. Our cross-sectional study design was limited in several aspects. Although this method is simple, convenient, and economically feasible, a temporal or causal relationship between stress levels and ego defence mechanisms cannot be established based on these results. Furthermore, it is imperative to remember that the current study focused on medical students only, and hence, the results may not apply to the general population.

CONCLUSIONS

The first psychoanalytical concept of the DSM based on Ego Defence Mechanisms, described by Sigmund Freud, reflects how an individual deals with conflict and stress. This article, it is identified and highlight the lower mean scores of immature defence mechanisms than those for neurotic and mature mechanisms among medical students. The greater use of these neurotic defences may reflect greater stress levels than the general population. However, this must be interpreted with caution as there is no normative data on the prevalence of defence mechanisms in the general population. In conclusion, we found females from private medical colleges, and preclinical years to be the strongest factors associated with the use of neurotic mechanisms amongst the medical students. Future studies are recommended to confirm our findings, as the primary utilization of neurotic mechanisms as the basic style of coping predicts significant long-term maladaptive functioning, dissatisfaction, and poor quality of life. These factors are a useful resource for medical practitioners and student counsellors to help identify students who are most in need of interventions to encourage the adoption of mature defence mechanisms, and hence, attain a better quality of life. The findings of this study may suggest a need for further research to assess the effect of specific ego defence mechanisms used by individuals on their quality of life.

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