

## Research Article

# An urge for paradigm shift in psychometrics and psychiatric disease diagnosis

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### ABSTRACT

**Background:** With the advancement in all modalities of medicine, the psychometrics and diagnosis of psychiatric illnesses also advanced in twentieth century but not accurate enough to label them explicit. Despite of extensive research in the field of mental health, there is a paucity of data on critical analysis of measuring methods of mental capacities, processes and diagnostic modalities of mental illnesses. The aim of current study was to explore the perception of all concerned stakeholders about the effectiveness of assessment methods in psychology and psychiatry.

**Methods:** Semi-structured interviews with individual participants were conducted in Karachi, Pakistan during October 2015 to January 2016 for this qualitative study. Total 28 participants participated in the study, 7 participants per domain (doctors, psychologists, psychiatrists, and medical students/residents) were selected by homogeneous quota sampling. Interviews were transcribed, and identification of emerging and repeated themes was done. NVivo and concordance software were used to conduct content and discourse analysis, with simple counting methods. Microsoft excel was used for charts and tables. Each respondent gave written informed consent to participate in the study.

**Results:** More than one third (39%) of the sample contemplated the current methods of psychological and psychiatric assessment as deficient to a major extent in accuracy while one third (36%) of them said it is insufficient to some extent and one participant stated it is completely deficient which makes 4% of the sample. Near half (43%) of respondents identified weakness of DSM IV and psychometrics as arbitrary, one fifth (21%) as use of checklist for diagnosis, and one third (36%) as unavailability of confirmatory tests. Almost half of the respondents (46%) put forward the proposal of listening the mind talk or self-talk of the patient/person while one third (36%) of sample suggested for a device which can help in abridging the subjective bias in assessment and confirmation. One fifth (18%) proposed to see the thought process and content of patient/person in their minds on a screen.

**Conclusions:** A significant number of stakeholders of psychology and psychiatric fields affirmed the limitations of the current criteria for diagnosis for mental conditions and illnesses stated either by DSM or ICD and psychometrics. The stated constraints included inconsistency, use of checklist for diagnosis, and lack of confirmatory tests. There is a demand of more objective methods addressing the scientific impediments in advancement in the fields of psychology and psychiatry.

**Keywords:** Paradigm shift, Psychometrics, Psychiatric disease diagnosis marker

### INTRODUCTION

With the advancement in all modalities of medicine, the Psychometrics and diagnosis of psychiatric illnesses also

advanced in twentieth century but not accurate enough to label them explicit. Diagnoses in psychiatry serve a variety of important purposes and are not just a “label.” Making a careful diagnosis is as fundamental in

psychiatry as it is in the remainder of medicine. Psychiatry is a diverse field, and symptoms of mental illness encompass a wide range of emotional, cognitive, and behavioral abnormalities. The use of diagnoses introduces order and structure to this complexity. Many psychiatric diagnoses are associated with a characteristic course and outcome. Bipolar I disorder, for instance, is usually episodic, with periods of relatively severe abnormalities in mood interspersed with periods of near normality or complete normality. Thus, patients with bipolar I disorder have a relatively good outcome. Some other types of disorders, such as schizophrenia or personality disorders, typically have a more chronic course. Diagnoses are a useful way of summarizing the clinician's expectations about the patient's future course of illness. As psychiatry has advanced clinically and scientifically, relatively specific treatments for particular disorders or groups of symptoms have been developed. Diagnoses are often used to choose an appropriate treatment.<sup>1-4</sup>

Although physicians prefer to conceptualize their relationships with patients in terms of care and treatment, diagnoses are used by other health care providers, attorneys, epidemiologists, and insurance companies. Each time a clinician makes a diagnosis and records it, he or she must do so with an awareness of the nonclinical uses to which it may be put. Because mental illnesses may be subject to discrimination and misunderstanding, these diagnoses involve a particular risk. Beyond the clinical uses, diagnostic systems also have other purposes like diagnoses are used to monitor treatment and to make decisions about reimbursement, used by attorneys in malpractice suits and in other litigation, by health care epidemiologists to determine the incidence and prevalence of various diseases throughout the world, and to make decisions about insurance coverage.<sup>4-6</sup>

It became apparent that diagnostic practices varied widely in the United States, no doubt reflecting a diversity of training. Shortly thereafter, the American Psychiatric Association convened a task force to develop a diagnostic manual. The first DSM (now referred to as DSM-I) was published in 1952. Over the years, the DSM has undergone four major revisions (DSM-II, DSM-III, DSM-IV, and DSM-5). Currently, diagnoses in psychiatry are based on DSM-5, which was published in 2013. The DSM criteria are simple provisional agreements, arrived at by a group of experts, on what characteristic features must be present to make a diagnosis. Although diagnostic criteria are based on data whenever possible, the available data are often inadequate or incomplete. Thus, the selection of signs and symptoms is sometimes arbitrary. The diagnoses themselves are certainly arbitrary. The DSM system may encourage clinicians to treat diagnosis as no more than a checklist and forget about the patient as a person.<sup>1-10</sup> A similar system is used in Europe called International statistical classification of diseases and related health

problems (ICM). Both ICM and DSM-IV-TR use the same numerical codes for each disorder.<sup>11</sup>

Psychometrics is the branch of psychology that deals with the design, administration, and interpretation of quantitative tests for the measurement of psychological variables such as intelligence, aptitude, behavior, skills, thoughts and personality traits.<sup>3</sup> Psychological assessment is never focused on a single test score or number. Every person has a range of competencies that can be evaluated through a number of methods. A psychologist is there to evaluate the competencies as well as the limitations of the person, and report on them in an objective but helpful manner.<sup>3</sup> Psychological assessment is a powerful tool, but its effectiveness depends upon the skill and knowledge of the person administering and interpreting the test. When used inappropriately, psychological testing can mislead a person who is making an important life decision or decision about treatment, possibly causing harm.<sup>13</sup> Despite of extensive research in the field of mental health, there is a paucity of data on critical analysis of diagnostic modalities. The aim of current study was to explore the perception of all stakeholders about the effectiveness of assessment methods in psychology and psychiatry.

## METHODS

Author undertook a qualitative study for the perception about currently available psychological and psychiatric assessments tools. In brief, the study cohort consisted of 28 respondents from Karachi, Pakistan. 7 participants per domain (doctors, psychologists, psychiatrists, and medical students/residents) were selected by homogeneous quota sampling. All 28 respondents did not differ in key characteristics and experience.

Qualitative data were collected in one to one semi-structured interviews, which took place in a private room. The interviews were conducted by principal investigator herself. Interviews were transcribed, and identification of emerging and repeated themes was done, and used NVivo and concordance software to conduct content and discourse analysis, with simple counting methods. Microsoft excel was used for charts and tables. Each respondent gave written informed consent to participate in the study.

### *Ethical considerations*

The research was approved from the Institutional Review Board. Informed consent was obtained as a preliminary requirement. Participation was totally discretionary and no compulsion was used in the data collection process. All participants were fully informed of the nature of the study and the use of the data. Participants were also ensured of confidentiality and withdrawal at any stage of study.

## RESULTS

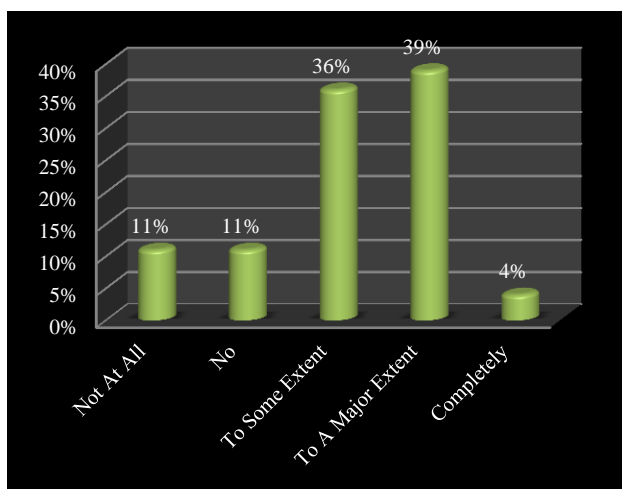
A detailed summary of each interview was drafted and selected quotes were transcribed in author's words not precisely the respondents verbatim. A qualitative study was done on 28 participants who qualified for the inclusion criteria and willing to participate in the study. The data was organized and four main themes emerged: Inadequacy in accepted approach of psychological/psychiatric assessment, exhortations for efficacious tools, merits and challenges of proposed solutions.

Twenty eight respondents participated comprised of 7 participants per domain namely doctors, psychologists, psychiatrists, and medical students and residents.

### Findings from the interviews

#### Inadequacy in accepted approach of psychological/psychiatric assessment

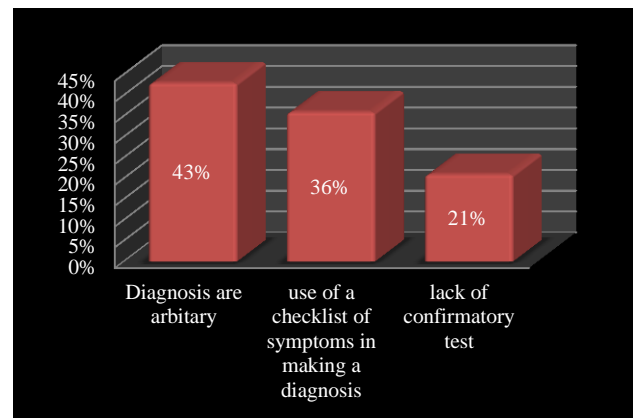
The findings established through this study were very compelling and disconcerting for me especially the weaknesses identified by the participants. All of them listed the limitations of the current criteria for diagnosis for illnesses and mental states stated by DSM or ICD and Psychometrics respectively. The responses were organized and summarized in a logical manner for understanding. More than one third 11 (39%) of the sample thought the current methods of assessment are deficient to a major extent in accuracy while one third 10 (36%) of them said they are insufficient to some extent and one participant said they are altogether insufficient which makes 4% of the sample (Figure 1). More than one third 12 (43%) of respondents identified weakness of DSM IV and Psychometrics as arbitrary, one fifth 6 (21%) as use of only checklist for diagnosis, and one third 10 (36%) as unavailability of confirmatory tests. (Figure 2).



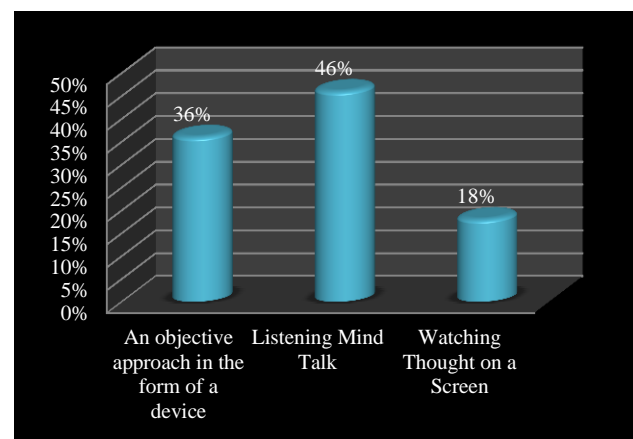
**Figure 1: Current methods of psychological/psychiatric assessment are deficient in accuracy.**

### Exhortations for efficacious tools

Almost half of the respondents 13 (46%) put forward the proposal of listening the mind talk or self-talk of the patient/client through a device while one third 10 (36%) of sample suggested for a device which can help in abridging the subjective bias in assessment and confirmation. One fifth 5 (18%) proposed to see the thought process and content of patient/client on a screen. They were of the opinion that if it is made possible by any means then it will make the revolution. They said this will not only make diagnosis/assessment very accurate but can also be very beneficial for fields of forensic and criminology (Figure 3).



**Figure 2: Inadequacies in current methods of diagnosis.**



**Figure 3: Modalities suggested by participants.**

### Merits and challenges of proposed solutions

Ideas, solutions, concerns, and expectations of participants were organized in tables for convenience. The responses arranged under the head of "merits" consisted of proposed solutions of respondents for accuracy (Table 1). Participants' ideas regarding expected demerits of their suggested methods were listed in (Table 2) under the head of "challenges".

**Table 1: Merits of proposed solutions identified by respondents.**

Merits-1	
Listening Mind Talk through a device for Diagnosis of Psychiatric disorders and Psychometry	<ul style="list-style-type: none"> <li>• Better insight into the clients behavior</li> <li>• Increased accuracy of the information</li> <li>• Access to diagnostically significant material that patient doesn't share</li> <li>• Savings of time and money in diagnosing the problem</li> <li>• Suicide prevention—early detection of tendency</li> <li>• no misdiagnosis</li> <li>• clear understanding of the issues with that person</li> <li>• Beneficial in psychological diagnosis /treatment</li> <li>• Knowledge sharing</li> <li>• Swift action can be taken by Doctors</li> <li>• It will help develop the trust level which is very important considering a doctor and patient relationship</li> <li>• One can anticipate the behavior of others and can act accordingly</li> <li>• We can know the true feeling of the person about pain or any other thing related to disease.</li> <li>• How much he is expecting from the caregiver.</li> <li>• How much he can trust anyone who is involved in his treatment.</li> </ul>
Merits-2	
Watching Thought content and process on a Screen for Diagnosis of Psychiatric disorders and Psychometry	<ul style="list-style-type: none"> <li>• no mistrust</li> <li>• clear understanding of the issues with that person</li> <li>• Time and money saving</li> <li>• Suicide prevention—early detection of tendency</li> <li>• You can check your perception's in patient's mind</li> <li>• Very helpful in case of emergencies</li> <li>• It will help us to remove barriers in order to create closer communities</li> <li>• Caregiver can put himself in the condition of patient and can see how he is taking his disease</li> <li>• It may help in satisfying the patient's psychology.</li> <li>• It would be a clear representation</li> </ul>

**Table 2: Expected challenges of proposed solutions by respondents.**

Challenges-1	
Listening mind talk through a device for diagnosis of psychiatric disorders and psycho- metry	<ul style="list-style-type: none"> <li>• End of personal freedom of thoughts</li> <li>• Reputation loss/disaster for the person</li> <li>• Self-talk can be very difficult to understand</li> <li>• maybe we're misguided by the feeling of the person</li> <li>• Social disorder and unrest</li> <li>• Mutual respect, love and code of family honor may be disturb</li> <li>• Will create new problems for security agencies to monitor protection of the devices</li> <li>• Not any particular, except it could create short term unlikeliness among peers as they don't know background of what other person is thinking at that moment</li> <li>• Loss of personal secrecy/Confidentiality disaster/Breach of privacy and confidentiality</li> <li>• Individual researches/ideas can be stolen</li> <li>• Can Create undesirable situation</li> <li>• Perception may changes about individuals</li> <li>• Interfering with the nature</li> <li>• Mistrust</li> </ul>
Challenges-2	
Watching Thought con and process Screen for Diagnosis o Psychiatric disorders ar Psychometr	<ul style="list-style-type: none"> <li>• It can make you partial against your relative/peers after your awareness about negativities in patient's mind</li> <li>• Visual representation are not very accurate as some details are missed out</li> <li>• Interfering with the nature</li> <li>• No concept of privacy</li> <li>• Social disorder and unrest</li> <li>• Loss of secrecy/confidentiality</li> <li>• Individual researches/ideas can be stolen</li> <li>• Create undesirable situation</li> <li>• Perception changes about individuals</li> <li>• End of personal freedom of thoughts</li> <li>• Reputation loss/disaster for the person</li> <li>• Mutual respect, love and code of family honor may disturb</li> <li>• Will create new problems for security agencies to monitor protection of the devices</li> </ul>

## DISCUSSION

This study aimed to assess the perception of all concerned stakeholders about the effectiveness of assessment methods in psychology and psychiatry.

The findings signified constraints by the participants. In current study, more than one third of respondents identified weakness of DSM IV and psychometrics arbitrary, one fifth as use of only checklist for assessments, and one third as scarcity of confirmatory tests. Unfortunately there is no previous data to compare with but the findings of current study are in agreement with the disadvantages listed in Introductory Textbook of Psychiatry.<sup>1</sup> The DSM criteria are simple provisional agreements, arrived at by a group of experts, on what characteristic features must be present to make a diagnosis. Although diagnostic criteria are based on data whenever possible, the available data are often inadequate or incomplete. Thus, the selection of signs and symptoms is sometimes arbitrary. The diagnoses themselves are certainly arbitrary. They will remain arbitrary as long as we are ignorant about pathophysiology and etiology. Medical students and residents tend to crave certainty (as do many physicians long out of training), so they want very much to believe that a given DSM diagnosis refers to some “real thing.” Thus, the DSM system sometimes leads clinicians to lapse into petty and pointless debates about whether a patient “really” is depressed if he or she does or does not meet the DSM criteria.<sup>2-5</sup> The increased precision sometimes gives clinicians and researchers a false sense of certainty about what they are doing. The DSM system may sacrifice validity for reliability. Reliability refers to the capacity of individuals to agree on what they see, whereas validity refers to the capacity to predict prognosis and outcome, response to treatment, and ultimately etiology.<sup>6,7</sup> Psychodynamically oriented clinicians have objected that the DSM system has sacrificed some of psychiatry’s most clinically important concepts because psychodynamic explanations and descriptions are generally excluded. Biologically oriented psychiatrists have objected to the lack of validity in DSM as well. The DSM system and psychometrics may encourage clinicians/psychologists to treat diagnosis as no more than a checklist and forget about the patient/client as a person. Particularly DSM-5 can be used to streamline clinical interviews because it encourages the use of a checklist of symptoms in making a diagnosis.<sup>8</sup> There is nothing wrong with the checklist approach in psychometrics and psychiatric assessment, but the initial diagnostic interview should include many more aspects of the patient’s life as well. Perhaps the most important contribution that psychiatry and psychology make to medicine in general is that it emphasizes the importance of establishing rapport with patients/clients and knowing each patient/client as a unique person. This emphasis on care and compassion in addition to “cure” has been the essence of medical care since the time of Hippocrates.<sup>1,9,10</sup>

Clifton K. Meador, said “There is no blood or urine test to measure mental function. There probably never will be”. During the twenty-first century when all of medicine is experiencing a paradigm shift in one way or another there is an urge for authentication of psychometrics and diagnostic modalities of psychiatry in order to end the subjectivity and make it reliably well grounded. This can be achieved by invention of a tool or device which enables us to either listen to the mind talk or see the thought on a screen. Even though it sounds impossible but previous few centuries have proved that there is nothing impossible in this world. If we can think of anything then there is a possibility of transforming this desire into reality. This can be achieved by a joint venture by medicine, physics and engineering. Engineering is the application of scientific and mathematical principles to practical ends such as the design, manufacture and operation of efficient and economical structures, machines, processes, and systems.<sup>12</sup> According to Sherlock Holmes dictum: “...when you have excluded the impossible, whatever remains, however improbable, must be the truth”.

## CONCLUSION

A significant number of stakeholders of psychology and psychiatry affirmed the limitations of the current criteria for assessment of mental status and illnesses stated either by DSM or ICD and psychometrics. The identified constraints included inconsistency, use of checklist for diagnosis/assessment, and lack of confirmatory tests. There is a demand of more objective methods to address the scientific impediments in advancement of the fields of psychology and psychiatry.

The study was an attempt to demonstrate exhortations for efficacious tools of assessment. The findings of current study may not change the whole idea of diagnosis but it seems like there is room for improvement in future. The findings cannot be generalized due to the limited sample and volunteer bias. Future studies are needed for advance research in this direction to revolutionize the field of mental health.

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