DEVELOPMENT OF ASTHMA PSYCHOSOCIAL SYMPTOM CHECKLIST

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ABSTRACT

The present study explored the psychosocial issues related to asthma in the context of Pakistani culture. The first phase comprised of individual interviews with 20 asthmatic patients to generate item pool as suffered by them. The list of 47 items, exclusive of duplication, was piloted on 10 asthmatic patients based on self-report measure of five point rating scale (Asthma Psychosocial Symptom Checklist). The main study was conducted with World Health Organization Quality of Life Brief (2003) questionnaire Urdu adapted version, Siddiqui Shah Depression Scale (1997) and the demographic checklist on 200 asthmatic patients taken from different government and private hospitals of Lahore over convenient sampling. Data of 100 normal individuals without history of lungs disease) was gathered to compare the results. Psychometric properties of the new scale asthma psychosocial symptoms checklist elicited Cronbach alpha, discriminant and convergent validity. Significance of health psychologists with reference to multi-model treatment approach was discussed in lieu to implication of the study.

Keywords: *Asthma, Psychosocial Issues and Symptoms, Validity & Checklist*

INTRODUCTION

In asthma, the airways of lungs have an inveterate state with inflammation though the reason is partially known. Typically, asthma has three properties, described as airflow restriction, extra sensitivity of airway to several stimuli and swelling of the bronchi with cells of inflammation resulting in exudation of plasma, hypertrophy of smooth muscles, deposition of matrix, damage to epithelium and plugging of airways with thick mucoid secretions (Kumar & Clark, 2009). Asthma affecting more than 300 million people is presently one of the most conventional and widespread diseases in the world (Fauci, Eugene, Dennis, Stephen, Dan & Jameson, 2008). In developed countries, the occurrence of asthma has elevated in the last 30 years, affecting more than 10–12% of adults and 15% of children by the disease, getting commoner in more urbanized countries such as UK, New Zealand and Australia. The hygiene hypothesis has long been proposed theory for prevalence of asthma in developing countries that describes if a child is exposed minimal to the communicable diseases, reciprocal germs and organisms in the early stage of life, it would decrease his actual biological resistance.

Then there would be higher chances of him to develop any kind of diseases of allergy; although the ecological reasons for above-mentioned remain unidentified. Studies done

for occupational asthma postulate that a high proportion of the workforce exposed to intoxicating sensitizers may have 15-20% chances to become asthmatic. Cases of asthma are projected to get higher to 100 million all over the world in next 10 years (Carone & Jones, 2000). Generally, atopic individuals have extrinsic asthma who presents positive skin-prick reactions to conventional allergens inhaled for example dust mite, pollens, fungi or animal dander. But with intrinsic asthma often having a late onset i.e., in middle age, however, many patients with adult-onset asthma show positive allergen skin tests and a history of respiratory symptoms related to childhood asthma (Fauci et al., 2008). The triggers are specific (occupational sensitizers e.g., chemical gasses and smoke, dirt at job) or non-specific (cold air and exercise, atmospheric pollution and irritant dusts, vapors and fumes, diet, emotions or stress, different drugs, allergens) are unavoidable and exposed by every day (Kumar & Clark, 2009).

LITERATURE REVIEW

Douwes, Brooks and Pearce (2010) explained Asthma to be considered as the "neurotic affection" formerly, by different ancient philosophers like Hippocrates, Maimonides, and Rabbi. Later, some physicians declared asthma the disease of nervous system, caused by environmental factors and inflammation. Previously, asthma was taken as merely a psychological disease called "asthma nervosa", but gradually the link between asthma and stress lost the fame. In middle of 20th century the connection between this disease and psychological issues were re-established (Chaudhry, Younis, Anwar, Aneela & Saeed, 2012). Later, learning theorists also conceptualized that some emotive reactions may strengthen pulmonary physiological responses, increasing the chances of reappearance of the same process. In the long run, both theorists asserted objectively the role of emotions in asthmatic patients. Wright, Rodriguez and Cohen (1998) incorporated the bio-psycho-social approach in it and postulated that our social setup, collaboration and personal psychological feelings may affected by asthma morbidity through neuro-immunological system.

Asthma has a close connection with stress, anxiety and depression as several studies suggest (Rimington, Davies, Lowe & Pearson, 2001; Pereira, Cavalcante, Pereira, Lucas, & Holanda, 2011; Tafti, Cheraghvandi, Safa, Eragh, Mokri & Talischi, 2011) as the symptoms exacerbate due to any of the multiple factors in the environment and make the person inclined to isolation and changes in mood; hence quality of life disturbs markedly (Llewelyn & Kennedy, 2003). The bio-psycho-social model (Engel, 1980) highlighted not only the promotion of health but also the development of diseases under the umbrella of biological predispositions along with psychological and socialization issues. Stress and disease are so closely related that they form a bidirectional relation with each other. With a chronic long term illness, people would have more psychological and social problems

in contrast to others (Rashid, Ghafoor, Masood, Mehmood, Awan & Ansar, 2012). These issues can increase the disease severity and relapse rate (Mayou, Peveler, Davies, Mann & Fairburn, 1991) as sited in Baum, Revenson, & Singer, 2001).

As the life expectancy rate has been increased markedly in the last five-six decades due to certain factors like rapid progress and advancement in medical science in both developed and developing countries, but it has increased the average age of a person, mentioned in the World Population Prospects, The 2012 Revision (United Nations, Department of Economics and Social Affairs, 2013), claiming ratio may rise to 21-24% till 2050. But on the other hand, it has increased the suffering of people having a chronic illness resulting into helplessness and stress (Osborne, Bindemann, Noble & Reed, 2014). Pakistan is one of those developing countries where the prevalence rate of asthma is increasing rapidly by the time and the area needs more to study about especially how the illness cause psychological suffering and social awkwardness in a person's life. The key objective of the study is to identify the issues as no such study has been carried out in the country yet. Different assessment tools have been constructed to investigate quality of life in asthmatic patients in abroad indigenously with their own cultural fairness (Alpaydin, Bora, Yorgancioglu, Coskun, & Celik, 2012; Juniper, at al. 1992, 1998, 1999; & Juniper, Svensson, Mork, & Stahl, 2005).

In Pakistan, several studies have been conducted on only prevalence and treatment of asthma (Chaudhry, Younas, Anwer, Aneela, & Saeed, 2012; Shoukat, Gowani, Khowaja, & Khan, 2009; and Waqar, Khan, Hasnain, Saleem, Shaukat, Sarwar & Mahmood, 2009). While keeping in context of cultural influence, there is a need to develop a reliable and valid tool to investigate the psychosocial issues faced by the asthmatic patients.

RESEARCH METHOD

Phase 1: Unstructured interviews were conducted to explore the phenomenology in order to explore the psychological and social issues related to the patients with bronchial asthma. 12 diagnosed asthmatic patients (18-50 years) through convenient sampling from a private and a government hospital of Lahore were taken. They were asked open-ended questions about the nature, course, and severity of their illness along with its effects on their regular activities. All generated items were converted into phrases and statements according to their constructs; reviewed to drain out the similar items and to simplify the language, understandable to the people to maintain genuineness of the statements. The statements based on self-report, had to be asked on four point likert scale.

Phase 2: The pooled items' list was given to five experts of the field of clinical and health psychology. They were asked to rate each item on 1-5 rating scale i.e. 1 for least

and 5 for highest rating. The items acquiring less than 10 percentages were discarded due to having insufficient association. Initially a list made up of 56 items, eventually finalized with 47 items for further psychometric scrutiny.

Phase 3: This phase aimed to determine the comprehension level of the items, the layout of the measure and the instruction given to the participants with the aim to determine reader's friendliness. The checklist then was given to 5 patients of asthma from a private hospital of Lahore. Time consumed in the administration of the scale was noted to be 10 minutes and no difficulty in comprehension was reported.

Phase 4: Following steps were involved in main study to determine the psychometric properties of the scale: The sample (n=200) of asthmatic patients (M = 1.51, SD = .50), was selected from the private and government hospitals of Lahore. The sample (n=100) for control group (M = 1.60, SD = .49) was selected of those without history of asthma or any other lungs disease. The age range of both groups' participants lies within the predetermined (18-50 yrs).

Measures: It integrated basic information of the participants including age, gender, education, marital status, occupation and source (Government or Private) as well as intensity and duration of illness. The newly developed APSC was consisted of 47 items as experienced and expressed by asthmatics. The instructions for APSC were, Following are the highlighted issues suffered by patients like you. Read them carefully and rate them to the degree you encounter them.

Khan, Akhtar, Ayub, Alam, and Leghari (2003) translated WHOQOL-BREF in Urdu. The scale was used to establish the discriminant validity of APSC. It is a self-report measure to assess the quality of life. It has 26 items based on the four domains i.e. Physical Health, Social Relationship, Psychological Health and Environment. The response options are Not at all=1, A little =2, A Moderate amount =3, Very much= 4, and extremely= 5. The Urdu version acquired significant linguistic equivalence (p<0.05), concept equivalence (r = 0.50 to 0.78 and p<0.01) and scale equivalence with the English version of WHOQOL BREF (1997) (Khan, et al., 2003).

Siddiqui and Shah developed SSDS in 1997 in Pakistan to measure depression. The scale was used to determine the convergent validity of APSC. SSDS can be used in both clinical and non-clinical settings. It has 36 items with the response options: Not at all=0, Sometimes =1, Often =2 and Always= 3. The scale developed split half reliabilities (r = 0.79 and r = 0.84) for clinical and r = 0.80 and r = 0.89 for the non-clinical samples. The Alpha coefficients for the clinical and non-clinical samples were 0.91 and 0.89 respectively. The scale correlated significantly with Zung's Depression Scale (1965), r =

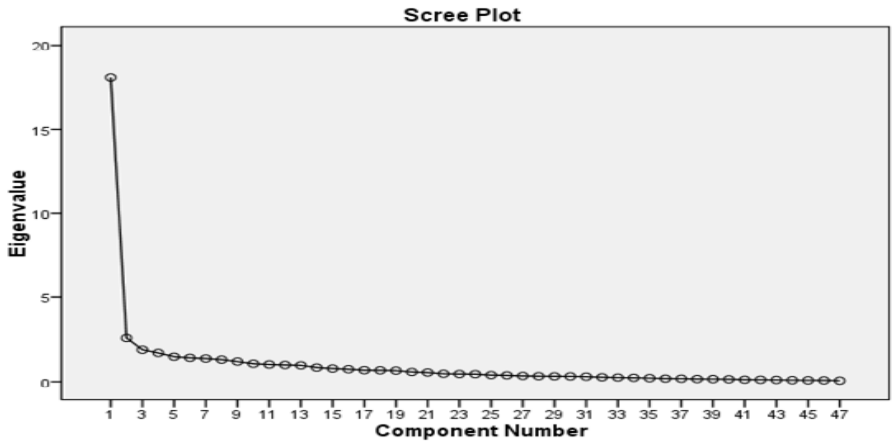
0.55 (p< .001) and psychiatrists' ratings of depression r = 0.40 (p< .05) (Siddiqui & Shah, 1997).

First of all, the brief aims and objectives were explained to the head of pulmonology / medicine departments of the private and government hospitals of Lahore, in order to get their formal permission to collect the data from their out-patient departments. After getting official permission, participants were selected on the basis of inclusion/exclusion criteria. All the participants were assured of confidentiality and secrecy of information. All the participants were given research protocol containing demographic form, APSC, WHOQOL-BREF Urdu version and SPSS. Normal testing time was 25 minutes. The illiterate asthmatic patients' accounts were taken with oral presentation of all the items in the protocol which took 40 minutes. 100 normal participants with no history of any lungs diseases were collected through convenient sampling. No protocol was discarded as 300 participants completed the information. Eventually, the data was analyzed through SPSS 21 for quantitative data analyses.

RESULTS OF STUDY

The section converses the psychometric properties of the APSC. Item analysis of APSC was computed on its 47 items. To retain the items, .30 and above factor loading criteria was used (Kline, 1993). 4, 3, 2, and 1 factor solutions were sought but single factor solution was found to be best fit as no item had less than .30 factors loading. Thus, all the items were retained in the scale. The Kaiser-Meyer-Olkin (KMO) value was found to be .89 and the initial Cronbach Alpha was found to be significant at p < .001.

Figure 1. Scree Plot showing Extraction of Factors of Asthma Psychosocial Symptom



The Scree plot is showing Eigen values and number of factors that could be retained; a clear-cut one factor solution, is apparent here. Kaiser-Guttman's retention criterion of

Eigen values (Kaiser, 1974) revealed only one single factor whose Eigen value is greater than 1.

Reliability of APSC

Cronbach Alpha was carried out on the APSC to determine the internal consistency of the scale items.

Table 1 Cronbach Alpha of Items of Asthma Psychosocial Symptoms Checklist (APSC)

Scale	Total no. of Items	*A*
APSC	47	.96

The analysis shows that all the items of APSC have very high internal consistency among all the 47 items of the scale. It also indicates the high construct and face validity of the scale.

Psychometric Properties of APSC

To elicit further psychometric properties of APSC, convergent validity and discriminant validity were computed. The convergent validity of APSC is established with SSDS (see Table 2). The correlation coefficient (r = .95, p < .001) between the total scores of both scales, clearly indicated that the more people face psychosocial issues with asthma; the more they are prone to develop depression. The discrminant validity of APSC was established with WHOQOL-BREF Urdu (Table 2). The negative correlation coefficient (r = -.88, -.80, -.42, -.72 , p < .001) between the total scores of APSC and the four factors of WHOQOL-BREF revealed that the more people with asthma experience different psychosocial issues, their quality of life is declined significantly on all the levels whether physical, psychological, social or environmental.

Table 2 Inter-Correlations, Means, SD of APSC, WHOQOL-BREF and SSDS

Factors	1	2	3	4	5	6	Total
1.APSC	---	-.72***	-.59***	-.43***	-.41***	.71***	.96***
2.QOL-Phy	---	---	.76***	.61***	.62***	-.63***	.88***
3.QOL-Psy	---	---	---	.69***	.67***	-.59***	.80***
4.QOL-Soc	---	---	---	---	.57***	-.55***	.42***
5.QOL-Env	---	---	---	---	---	-.45***	.72***
6.SSDS	---	---	---	---	---	---	.95***
M	58.33	22.12	20.28	6.97	26.51	31.87	
SD	31.25	6.83	4.96	1.80	4.92	20.95	

APSC=Asthma Symptoms Checklist; QOL-Phy=Quality of Life-Physical Health); QOL-Psy=Quality of Life-Psychological Health; QOL-Soc=Quality of Life-Social Relations;

QOL-Env=Quality of Life-Environment; SSDS=Siddiqui Shah Depression Scale. Correlation coefficients .19 to .22 are significant at $p < .05$. Correlation coefficients .23 to .31 are at $p < .01$. Correlation coefficients .35 to .81 are significant at $p < .001$.

Gender Differences on APSC

Table 3 shows significant gender differences on part of psychosocial issues with asthma, depression and quality of life except social relation.

Table 3 Means, SD, t-Values of Males and Females on APSC, 4 factors of WHOQOL-BREF and SSDS (n=200)

	Men (n = 98)	Women (n = 102)	95% CI			Cohen's D
Factors	M(SD)	M(SD)	t (198)	LL	UL	
APSC	68.32 (26.89)	79.77 (22.44)	3.28***	18.35	4.57	.46
QOL-Phy	20.64 (6.72)	18.57 (6.27)	2.26*	.26	3.89	.32
QOL-Psy	19.59 (4.96)	18.22 (4.86)	1.98*	.01	2.75	.28
QOL-Soc	6.81 (1.85)	6.34 (1.64)	1.87	.03	.95	.27
QOL-Env	26.33 (4.28)	24.75 (5.18)	2.35*	.26	2.91	.09
SSDS	33.85 (20.83)	42.23 (21.71)	2.78**	14.31	2.44	.39

Note: APSC=Asthma Symptoms Checklist; QOL-Phy=Quality of Life-Physical Health); QOL-Psy=Quality of Life-Psychological Health; QOL-Soc=Quality of Life-Social Relations; QOL-Env=Quality of Life-Environment; SSDS=Siddiqui Shah Depression Scale. *$p < .05$; **$p < .01$; ***$p < .001$. Table 3 shows that psychosocial issues of asthma disturbs the socialization of both genders equally. It also indicates that females have more psychosocial issues as well as have more tendencies to develop depression than males.

DISCUSSION

To gauge impairment in psychological health and social life caused by bronchial asthma, the study was carried out to develop an indigenous scale based on Pakistani cultural context. For this purpose, 200 diagnosed patients with asthma (Male=98, Female=102) were taken from different public and private hospitals of Lahore and 100 healthy individuals (Male=40, Female=60) having no history of any lung disease; age ranging 18-50 years; were procured to compare the results. The scale development began with the exploration of the idea as how patients with asthma experience, suffer and face the different psychological and social issues due to their illness. Hence, it was based on the verbatim of asthmatic patients themselves as the direct expression. Their 47 expressions were eventually pooled and altered into a five point likert scale. Factor analysis revealed

single factor solution to be best fit therefore; all the items were preserved in the scale with high Cronbach Alpha. The APSC resulted with high discriminant validity with World Health Organization Quality of Life Brief Urdu questionnaire (WHOQOL-BREF, 2003) on its four factors i.e. physical, psychological, social and environmental quality of life. The new scale also showed its significant convergent validity with Siddiqui Shah Depression Scale (SSDS, 1997).

The relationship with other mental health issues are already alleged in the literature (Goodwin & Eaton, 2005; Ekici, Ekici, Kara, Keles, Kocyigit, 2006; Di Marco et al. 2010) signifying the universal relationship of psychological troubles along with social dilemmas in relation to bronchial asthma. But an interesting finding was significant gender differences of asthma patients for the psychosocial problems on APSC. Although, the social quality of life on WHOQOL-BREF did not reveal any differences between the two genders, showing disturbed socialization of both gender equally, in contrast to the literature where females were found to have poorer overall quality of life than males (Sundberg, Palmqvist, Tunsater, & Toren, 2009). Studies done on such issues generally revealed both genders issues in combine (Muhlig, Bergmann, Emmermann, & Petermann, 1998; Skrzypulec, Drosdzol, & Nowosielski, 2007)

The most widely used and adapted scale Asthma Quality of life Questionnaire (AQLQ) (Juniper, 1999) was designed to assess disease limited quality of life. The questionnaire consists of 32 items in four health domains: activity limitation, symptoms, emotional function and environmental stimuli. The test has strong test retest reliability along with construct validity. This scale has been translated and adapted worldwide in different languages (Sanjuas, Alonso, Ferrer, Curull, Broquetas & Anto, 2001; Alpaydin et al. 2011; Grammatopoulou, Skordilis, Koutsouki & Baltopoulos, 2008). On contrary to AQLQ, the newly developed scale APSC revealed a different factor structure i.e. a single factor that might be due to Pakistani cultural and ecological circumstances as experienced by such patients. Another comparable fact is that AQLQ construct was based on the researchers' identified problems related to asthma (Juniper et al. 1992). But in APSC, the items of scale were based totally on direct expressions of asthmatic patients themselves. The overlapping of the symptoms showed that most of the expressions were related to a physical manifestation as well as a psychopathological feature at the same time as some items represent a strong feature of asthma but at the same time for stress and depression too. These symptoms collectively make an asthmatic patient inclined to develop stress and to withdrawal from a variety of the social and occupational activities.

Another difference might be the age range that was 17-70 years for AQLQ and 18-50 years for APSC, for which later adulthood disease experience might have created the

difference of opinion among the two cultures' asthmatic patients experience. The New scale APSC endowed with high internal item consistency along with high discriminant and convergent validity, suggesting that patients with asthma suffer from diverse psychological problems and social troubles which aid to decelerate their quality of life and accelerate stress on all the levels of domestic and occupational no matter what age or stage they are.

CONCLUSION

The results of the current study implicates the importance of a health psychologist in the different public and private health sectors in Pakistan, where multidisciplinary approach of treatment is in dire need for the patients particularly with bronchial asthma under one roof and at one place. On basis of identification of psychological and social issues being faced by the asthmatic patients, tailor-made management plans can be offered such as cognitive and behavior therapies and solution-focused approaches. Moreover, awareness to raise different types of psychological and social issues related to health through research may be increased through media and institutional workshops. It would help to get more objective, impartial and factual results as well as would help to take measures against the serious issues. The present study would help to screen-out the patients with asthma, highlighting their associated psychosocial issues, so that they are also addressed beside the biological simultaneously, signifying the bio-psycho-social model.

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