Health Status and Self-regulation in Asthmatic and Non-asthmatic adults

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Abstract

Chronic illnesses have become a health burden resulting in an economic burden making it a widespread concern. The main concerns of chronic illnesses are constant monitoring of one's health status and better management of the illness. In this context, the study explored the role of health status and self-regulation in those suffering from chronic illness and in those who are not suffering from the same. Survey method was employed and a between group design was used. A sample of 60 adults, 30 asthmatic and 30 non-asthmatic adults were selected through purposive sampling method. Health status questionnaire and Self-regulation questionnaire were used. Health status and its domains and self-regulation. There was a significant difference between asthmatic and non-asthmatic adults with reference to health status, health perception, physical functioning, role limitation attributing to physical health, energy, body pain, role limitation attributing to mental health, social functioning and mental health. The present study indicates the necessity of creating and increasing awareness of the importance of self-regulation in the context of chronic illnesses. Further, there is a need to improve illness management and maintain better health status and quality of life.

Keywords: Self-regulation, health status and asthma.

Introduction

During the past few decades, communicable diseases were a health and resultant cost burden. After attempts to control communicable diseases, a new menace has come up. That is non-communicable diseases like asthma, hypertension, diabetes, and obesity, which are resulting in high costs. In any country, chronic diseases are a public health issue and India is no exception. Since, affordability of medicines is poor, management of chronic illnesses like asthma becomes a complex health effort[1,2].

Asthma afflicts 300 million people around the world and more than 250,000 people die from its attack every year[3]. The survey conducted by in India found that 2468 persons per 100,000 report suffering from asthma. The rate being high in rural population (2649 per 100,000 persons) compared to urban population (1966 per 100,000 persons)[4]. The prevalence rates of asthma are higher among children than in adults, because childhood cases of asthma become less severe overtime. However, the onset of the disease can happen at any age[5]. In fact, 40% of adults with asthma have their first attack after the age of 40 [6, 7]. In case occupational related situation like working in quarry, dust related problems could also trigger symptoms of asthma)[8].

Asthma is a respiratory disorder in which inflammation, spasms and mucous obstruct the bronchial tubes and lead to difficulty in breathing. This is accompanied by coughing and wheezing. Asthma is strongly influenced by lifestyle factors. It requires continuous monitoring by a physician as well as by the patient.

Especially in a pattern like asthma where there may be symptomless periods with irregular asthma attacks[9,10]. Though there are reliever medications for acute attacks, overuse of the same, increases asthma symptoms like increase in frequency of asthma attacks, and hospital admissions[11].

Compared to reliever medication, preventer medication (corticosteroid inhalants) and optimal adherence (80%) are associated with better asthma control[12]. In symptomless periods, physicians recommend regular practise of comprehensive self-management behaviours with optimal treatment adherence[13,14]. This implies that instead of taking reliever medication after the acute attack of asthma it is better to adopt self-management and adhere to preventer medication. Thus for better therapeutic results preventer medication is required to be taken on a daily basis. Adherence to preventer medication is influenced by self-management, underscoring self-regulation.

Self-management plays a key role in medical treatment and follow up for asthma. Self-management is a continuous behavioural activity that is influenced by and reliant on self-regulation. Self-management has two major components, self-regulation and motivation. The self-regulatory process can be explained as translation of the behavioural intention into action, where 'planning' plays a crucial role[15]. The motivational process is an intention to engage in behaviour in order to achieve an outcome (goal) that is valued or a threat that is to be avoided. It is also a belief that the behaviour will lead to desirable and valued outcomes[16].

A model of self-regulation for chronic diseases was proposed and tested among an asthmatic sample. The model describes self-regulation as a continuous and reciprocal process[17].

The process of self-regulation involves many sub-activities. They are goal planning, monitoring, and learning from mistakes and drawbacks. It also includes taking clues from feedback for effective management, prioritizing the various activities, recognizing and dealing with distractions and affect regulation. For instance, an asthma patient would require practice self-regulation thereby practicing self-management.

The process of self regulation may include, having a diet free of the food allergens and adhering to preventer medication and medically suggested physical exercise (suggested intensity and duration). Further, it also includes efforts to quit health risk behaviours (like smoking) if any and protect oneself from pollution and environmental allergens. Moreover, it also involves attempts to undergo psychosocial therapy to recognize psychosocial triggers in the guise of emotional distress or any other personalized stressors and learn to manage them.

The purpose of self-regulation (influencing self-management) is better management of asthma; enhancing holistic health thereby influencing health status. Hence, self-regulation requires to be studied along with health status. Health status is an indicator of one's present health condition. Health status includes health perception, physical functioning, social functioning, mental health, energy/fatigue, bodily pains and role limitations attributable to physical and mental health [18]. Health status is an important indicator of wellbeing and in India around 22% have poor health status [19].

However, the purpose of self-assessment of health status is only to have a better awareness of one's healthy functioning and not for self-diagnosing. Diagnosing should always be by trained physicians and such self-assessments can never replace medical diagnosis. Health status gives a differential opportunity to people affected with chronic disease and otherwise (healthy people). In former, it serves as a reflector of the efficient management of the disease and in the latter as preventive care and precursory initiative. Thus, the present study aims to study the variables of heaths status and self-regulation in those who are suffering from chronic illness and those who are not suffering from the same. This would enable us to understand, the need to improve on self-management. In turn, it improves self-regulation and sustains the motivation to adhere to treatment and lifestyle changes. This would facilitate better management of the illness.

Hypotheses: There would significant difference between asthmatic and non-asthmatic adults with reference to health status and its dimensions like role limitation due to physical functioning etc.

There would be significant difference between asthmatic and non-asthmatic adults with reference to self-regulation

Methodology

Plan and design: A survey method and a between group design were used. The independent variable was health condition, which had two levels-adults suffering from asthma and adults not suffering from asthma. The dependent variables were health status and self-regulation

Participants: Sixty participants between the age group of 25years to 45years were purposively selected. There were 30 participants in each of the two groups of adults, those who were asthmatic and non-asthmatic. The asthmatic adults were selected from hospitals, asthma clinics and chest clinics. The non-asthmatic adults were selected from community residence i.e., apartments and gated communities in the area of Secunderabad. Patients with additional chronic illnesses like hypertension, diabetes, terminal illnesses, lactating and gestating women, participants above and below the age range and participants who did not comply signing the informed consent were excluded from the study.

Research instruments: In the study the following instruments were used

Health status questionnaire[18]: a 12-item questionnaire measured health status. The mean score ranged from 0-100. Higher the score indicated better health status. There were no reverse scored items. There were four items with 5-point scale response, three items with 3-point scale response and five items with 6-point scale response. The reliability of the questionnaire is .88 and content validity was established.

Self-regulation questionnaire[20]: 5-point likert scale with 31 items measured self-regulation. The score ranged from 31-155. Higher scores indicated higher self-regulation. The response options ranged from strongly disagree=1 to strongly agree=5. The reliability of the questionnaire is .92 and content validity was established.

Procedure: The different hospitals, asthma clinics and chest clinics in Secunderabad were approached to seek permission for data collection. For non-asthmatic adults, community residences i.e., apartments and gated communities in the area of Secunderabad were approached and permission was sought to conduct data collection. After selecting participants, rapport was established with them. The participants were requested to spare 20-35 minutes to fill in the questionnaires. The participants were asked to fill in the informed consent form, demographic details and the questionnaires. Later, the participants were debriefed. The response sheets were scored. The results were tabulated and statistics were computed.

Results and Discussion

The t test and the effect sizes were calculated using SPSS version 20. The results of descriptive statistics and inferential statistics are reflected in table 1. It was found that, there was significant difference between asthmatic and non-asthmatic adults with reference to energy. The magnitude of difference of energy was large between the two groups as observed from the large effect size (t = 4.15, p<0.01, d = -1.07). The negative value of the effect size shows that asthmatic adults had low energy. There was significant difference between asthmatic and non-asthmatic adults with reference to bodily pain. The magnitude of difference of bodily pain was moderate between the two groups as observed from the moderate effect size (t = 4.14, p<0.01, d = -0.66). The negative value shows that asthmatic adults had more bodily pain.

Lower energy levels and bodily aches could be a consequence of non-restful sleep during the night due to constant coughing and wheezing. Further, the asthmatic adults may have restricted movements and sedentary lifestyle due to their illness condition. Similar findings were found in a research study by University of Illinois Hospital and Health Science System, wherein the asthmatic adults had shortness of breath, tightness of chest and nocturnal awakening due to coughing and wheezing.

Among asthmatic adults, such circumstances limit their role related activities, pertaining to physical and psychological aspects in their every day functioning. This is observed in the following domains.

There was significant difference between asthmatic and non-asthmatic adults with reference to their role limitation attributing to physical factors (t = 7.51, p<0.01, d = -1.94). The magnitude of difference of role limitation attributing to physical factors was large between asthmatic and non asthmatic adults as observed from the large effect size. The negative value showed that the role limitation due to physical factors was high in asthmatic adults.

Given the nature of illness of asthma and the associated complications, mentioned in previous paragraphs, psychological factors also influence role limitation.

The present study found significant difference between asthmatic and non-asthmatic adults with reference to their role limitation attributing to mental factors (t = 7.13, p<0.01, d = -1.84). The large effect size implies that the magnitude of difference of role limitation attributing to mental factors was large between asthmatic and non-asthmatic adults. The negative value shows that the role limitation due to mental factors was high in asthmatic adults.

Asthmatic adults face mental problems like stress, fear, hypervigilance, anxiety, confusion, and loss of control [21]. Given

the unpredictable nature of asthma attacks, asthmatic adults tend to get stressful, as their routines get disturbed frequently and at times, they would not be able to complete the intended tasks. Such psychological stress results in release of cortisol, leading to increase in airway inflammation. These neuroimmunological effects associated with asthma further worsen their illness condition [22, 23].

During such situations, there would be diversion of cognitive and emotional energies towards addressing the acute attacks. This results in limitation in their role related activities and daily functioning.

The effect of illness condition of asthma is not restricted only to the individual's intrapersonal realms like energy, bodily pain, role related activities and daily functioning. The effect extends to their interpersonal realms also, like their social functioning.

The present study found that there was significant difference between asthmatic and non- asthmatic adults with reference to their social functioning (t = 5.97, p<0.01, d = -1.54). The magnitude of difference of social functioning was large between asthmatic and non-asthmatic adults as observed from the large effect size. The negative value showed that social functioning was low in asthmatic adults. Asthma is associated with material (avoiding allergens), social (restricted outdoor activities), and psychological deprivation. Such an illness induced deprivation leads to restricted interaction with the environment [24].

Further, it curtails their social activities and interaction. This may be to avoid disturbance in the smooth flow of social interaction and to avoid any embarrassment in social situations. The other reason may be to avoid awkwardness caused by symptoms i.e. constant coughing, wheezing, and shortness of breath. Anticipation of unexpected situation may lead to social isolation, further deteriorating their social functioning.

As observed above, illness condition of asthma specifically effects intrapersonal and interpersonal realms of an individual. In other words, it effects the well being of the asthmatic adults and their overall mental health also.

There was significant difference between asthmatic and non-asthmatic adults with reference to their mental health (t = 2.44, p<0.05, d = -0.63). The magnitude of difference of mental health was moderate between asthmatic and non-asthmatic adults, as observed from the moderate effect size. The negative value shows that mental health was low in asthmatic adults. Studies found that psychosocial issues related to asthma take the path of social isolation, anger, and high-risk lifestyle. This further leads to substance abuse (40% of cases), guilt, family conflicts, and life crisis [24]. These factors could contribute to the occurrence of anxiety and depression. Hence, we see that anxiety and depression are high in asthmatic adults [25, 26].

Table-1
Summary of M, SD, 95% CIs, effect sizes (Cohen's *d*) and t test calculated for health status, its dimensions and self-regulation of asthmatic and non-asthmatic adults

Variables	Asthmatic adults M (SD)	Non-asthmatic adults M (SD)	t (58)	95% Confidence interval		Effect sizes (*d*)
				Lower bound	Upper bound	
Health status	45.19 (15.76)	67.59 (14.12)	5.80**	14.53	29.85	-1.50
Health perception	46.00 (17.44)	70.67 (16.49)	5.63**	15.90	33.44	-1.45
Physical functioning	47.74 (29.27)	59.42 (30.22)	1.52(NS)	-3.70	27.05	-0.39
Role limitation (physical)	23.33 (18.21)	72.50 (30.90)	7.51**	36.06	62.27	-1.94
Role limitation (mental)	38.17 (17.74)	75.00 (22.05)	7.13**	26.49	47.18	-1.84
Social functioning	45.50 (24.30)	80.83 (21.46)	5.97**	23.49	47.18	-1.54
Energy	43.33 (22.34)	66.67 (21.23)	4.15**	12.07	34.59	-1.07
Bodily pain	44.83 (22.19)	60.00 (23.86)	4.14**	12.50	35.83	-0.66
Mental health	54.86 (19.48)	66.51 (17.47)	2.44*	2.08	21.21	-0.63
Self-regulation	103.47 (22.81)	106.63 (17.57)	1.17 (NS)	-4.35	16.69	-0.16

*Note: * p<0.05, ** p<0.01 and NS-not significant*

Such psychosocial issues related to their illness condition, could make the individual less effective in their personal and social realms. All these factors will have a cumulative effect on mental health. Thus, the results support the hypothesis that there would significant difference between asthmatic and non-asthmatic adults with reference to health status and its dimensions like role limitation due to physical functioning and mental functioning, social functioning, bodily pain and energy and mental health.

Conclusion

Given the psychosocial issues faced by the asthmatic patients as mentioned above, there is a need to assuage the symptoms by self-management. This involves developing a tailor-made programme to modify lifestyle and to sustain the same by employing self-regulation strategies and methods. In this endeavour the information technologies can be used to aid effective health communication all groups of people but specifically to vulnerable groups. By this method mass health communication becomes a possibility[27].

References

1. Kotwani A., Availability, price, and affordability of asthma medicines in five Indian states, *International Journal Tuberculosis Lung Diseases,* **13,** 574-9 **(2009).** Retrieved from http://apps.who.int/medicinedocs /documents/s16216e /s16216e.pdf

2. Kotwani A., Access to essential medicines and standard treatment for chronic diseases, *Indian Journal of Pharmacology,* **42,** 127-8 **(2010)** Retrieved from http://www.ijp-online.com/article.asp?issn=0253-7613; year=2010;volume=42;issue=3;spage=127;epage=128;aula st=Kotwani

3. WHO (World Health Organization), Fact sheets: Asthma, Diabetes and Epilepsy **(2007),** Retrieved from http://www.who.int/mediacentre/factsheets.

4. National Family Health Survey, Ministry of Health and Family Welfare, **(2009),** Retrieved from http://www.nfhsindia.org/data/india/indch6.pdf.

5. Burg I.N. and Ingall C.G., The immune system. In L. L.Haymen and E. M. Spoting (Eds.), Handbook of pediatric nursing New York: Wiley, 424-477 **(1991)**

6. Braman S.S., Kaemmerlen J.T. and Davis S.M., Asthma in the elderly. A comparison between patients with recently acquired and long-standing disease. Am Rev Respir Dis, **143,** 336–340 **(1991)** Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/1990949

7. Burrows B., Barbee R.A. and Cline M.G., et al, Characteristics of asthma among elderly adults in a sample of the general population. *Chest,* **100,** 935–942 **(1991**) Retrieved from http://www.ncbi.nlm.nih.gov/pubmed /1914608

8. Srinivasan S. and Ilango P., Occupational Health Problems of Women Migrant Workers in Thogamalai, Karur District, Tamil Nadu, India *Int. Res. J. Social Sci.,* **2(2),** 21-26 **(2013)**

9. Halm E.A., Mora P. and Leventhal H., No symptoms, no asthma: The acute episodic disease belief is associated with poor self-management among inner-city adults with persistent asthma. *Chest*, **129,** 573–580 doi:10.1378 /chest.129.3.573 **(2006)**

10. Ulrik C., Backer V., Soes-Petersen U., Lange P., Harving H. and Plaschke P., The patient's perspective: Adherence or non-adherence to asthma controller therapy? *Journal of Asthma*, **43,** 701–704 **(2006**) Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/17092852

11. Stern L., Berman J., Lumry W., Katz L., Wang L., Rosenblatt L. and Doyle J.J., Medication compliance and disease exacerbation in patients with asthma: A retrospective study of managed care data, *Annals of*

Allergy, Asthma, and Immunology, **97,** 402–408, doi:10.1016/S1081-1206(10)60808-3 **(2006)**

12. Lasmar L., Camargos P., Champs N.S., Fonseca M.T., Fontes M.J., Ibiapina C., Moura J.A. Adherence rate to inhaled corticosteroids and their impact on asthma control. *Allergy*, **64,** 784–789, doi: 10.1111/j.1398-9995.2008.01877.x **(2009)**

13. National Heart, Lung, and Blood Institute of U.S., National Institutes of Health, U.S. Department of Health and Human Services. Expert panel report 3: Guidelines for the diagnosis and management of asthma **(2007)** Retrieved from http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.htm

14. Ring N., Jepson R., Pinnock H., Wilson C., Hoskins G., Sheikh A. and Wyke S., Encouraging the promotion and use of asthma action plans: A cross study synthesis of qualitative and quantitative evidence. *Trials,* **13(216)** doi:10.1186/1745-6215-13-216 **(2012)**

15. Sniehotta F.F., Towards a theory of intentional behaviour change: plans, planning, and self-regulation. *British Journal of Health Psychology,* **14(2),** 261–273, doi: 10.1348/135910708X389042 **(2009)**

16. Gollwitzer PM and Sheeran P., Implementation intentions and goal achievement: A meta-analysis of effects and processes. *Adv Exp Soc Psychology,* **38,** 69-119 **(2006).** doi:10.1016/S0065-2601(06)38002-1

17. Clark N.M., Gong M. and Kaciroti N., A Model of Self-Regulation for Control of Chronic Disease. *Health Education and Behaviour*, **28(6),** 769-782, doi: 10.1177/109019810102800608 **(2001)**

18. Ware J.Jr., Kosinski M. and Keller S.D., A 12-Item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity. *Medical Care,* **34(3),** 220-33 **(1996)** Retrieved from http://www. ncbi.nlm.nih.gov /pubmed/8628042

19. Dehury B., Influence of Perceived Economic Well-being on Self-Rated Health Status of the Older Adults Aged 50 Years and above in India, *Int. Res. J. Social Sci.,* **4(4),** 34-42 **(2015)**

20. Carey K.B., Neal D.J. and Collins S.E., A psychometric analysis of the self-regulation questionnaire. Addictive Behaviours, **29(2),** 253–260, doi:10.1016/ j.addbeh.2003. 08.001 **(2004)**

21. University of Illinois Hospital and Health Science System (n.d.). Emotional and social effects of asthma. Retrieved from http://hospital.uillinois.edu/Patient_Care_Services/ Pulmonary/Our_Areas_of_Expertise/Asthma/Emotional_a nd_Social_Effects.html?Preview=trueandSite=NoneandInc ludeAllPages=trueandtfrm=2

22. Wright R.J., Health effects of socially toxic neighborhoods: the violence and urban asthma paradigm. *Clinical Chest Medicine,* **27,** 413-21, doi:10.1016/ j.ccm.2006.04.003 **(2006)**

23. Forsythe P., Ebling C., Gordon J.R., Befus A.D. and Vliagoftis H., Opposing effects of short- and long-term stress on airway inflammation. *American Journal of Respiratory and Critical Care Medicine,* **169(2),** 220-6 **(2004),** Retrieved from http://www.ncbi.nlm.nih.gov /pubmed/14604839

24. Harrison B.W.D., Psychosocial aspects of asthma in adults. *Thorax,* **53,** 519–525, doi: 10.1136/thx.53.6.519 **(1998)**

25. Centannin S., Marco F.Di., Castgna F., Boveri B., Casanova F. and Piazzinni A., Psychological issues in the treatment of asthmatic patients. *Respiratory Medicine,* **94,** 742-749, doi:10.1053/rmed.1999.0766 **(2000)**

26. Katon W.J., Richardson L., Russo J., Lozano P. and McCauley E., Quality of mental health care for youth with asthma and comorbid anxiety and depression. *Medical Care.* **44(12),** 1064–1072 **(2006)** Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/17122709

27. Ojuondo G. and Kwanya T., The Role of ICTs in Health Communication in Slums in Kenya *Int. Res. J. Social Sci.,* **3(10),** 28-34 **(2014)**