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journal homepage: www.elsevier.com/locate/dsxDevelopment and validation of a questionnaire to assess socio-behavioural impact of COVID-19 on the general population[☆]

Kamal Bandhu Kalanidhi^a, Piyush Ranjan^{b,*}, Siddharth Sarkar^c, Tanveer Kaur^b, Ashish Dutt Upadhyay^d, Amandeep Singh^b, Anamika Sahu^e, Munnoo Khan^f, Barre Vijay Prasad^g, Upendra Baitha^b, Arvind Kumar^b

^a Department of Geriatric Medicine, AIIMS, New Delhi, India^b Department of Medicine, AIIMS, New Delhi, India^c Department of Psychiatry and National Drug Dependence Treatment Centre, AIIMS, New Delhi, India^d Department of Biostatistics, AIIMS, New Delhi, India^e Student Wellness Centre, AIIMS, New Delhi, India^f JRF MDNIY, New Delhi, India^g Clinical Psychology, AIIMS, New Delhi, India

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ABSTRACT

Background and aim: The aim of the study is to develop a valid and reliable tool to assess socio-behavioural changes due to COVID among the general population.

Methods: This mixed method study has two phases. Phase I for questionnaire development (literature review, focus group discussion, expert evaluation and pilot testing). Phase II for establishing construct validity via factor analysis and internal consistency via Cronbach's α by administering the questionnaire on 179 participants.

Results: A questionnaire comprising 33 questions and five domains was developed having Cronbach's α of 0.82.

Conclusion: The developed questionnaire is a concise, easy to administer and valid tool to assess socio-behavioural changes.

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1. Introduction

As the world progresses through the different phases of the COVID-19 pandemic, it has brought about significant changes in the social and behavioural health of the population [1,2]. Previous pandemics (SARS, Ebola, H1N1) have revealed that the change in sleep and dietary routine has impacted the lifestyle of individuals, was long standing and significant [3,4]. Preventive health measures forced by the government (household confinement, social distancing, and decreased recreational and social activities impacted the lifestyle related behaviours) resulted in adverse metabolic complication such as diabetes, obesity and cardiovascular diseases [5,6].

[☆] **Place of Study:** Department of Medicine, All India Institute of Medical Sciences, New Delhi.

* Corresponding author. Department of Medicine, Third floor, Teaching block, All India Institute of Medical Sciences, New Delhi, India.

E-mail address: drpiyushdost@gmail.com (P. Ranjan).

There is a pressing need to study the impact of these socio-behavioural changes, whether positive or negative, at an individual as well as at a community level. Having a scale or an instrument is likely to be helpful to assess these changes systematically.

There is a paucity of comprehensive tools to assess the diversity and depth of the socio behavioural changes among the general population in response to the COVID pandemic. A couple of scales available are primarily from the developed countries and are not validated on Indian population [7,8]. This paper aims to develop a validated tool to assess the socio-behavioural changes due to COVID-19.

2. Material and methods

The development and validation of the questionnaire was done using mixed methods study design. A standardised methodology included literature review, focus group discussion, expert review, pre-testing (Phase 1) and validation (Phase 2) [9].

2.1. Phase 1: Development of the questionnaire

For the purpose of item-generation, electronic literature review was carried out using Google scholar and PubMed search engines using the key string (Coronavirus OR Pandemic OR COVID-19) AND (Scale OR Questionnaire OR Tool) AND (Social*) AND (Behavioural*).The procedure for the development of the questionnaire is depicted in Table 1.

2.2. Phase 2: validation of the questionnaire

In this phase, a questionnaire was prepared and the data was collected from 179 participants of different demographic strata such as age, sex, socio-economic status, to ensure the principle of maximum diversity. The questionnaire was designed on Google forms and data was collected from 9th –16th December, 2020.

2.3. Statistical analysis

The face and the content validity of the developed questionnaire was established in FGDs, expert evaluation and pre-testing. For construct validity, the exploratory factor analysis with varimax rotation was carried out to test the domain structure [10]. Cronbach’s α was calculated to measure the internal consistency and Kaiser–Mayer–Olkin (KMO) measure was used to assess adequacy of the sample. Eigenvalue threshold of 1 was used to determine the number of factors in the factor [8], using IBM SPSS Statistics 24 software.

3. Results

Final questionnaire comprises 33 items. The questionnaire has a good internal consistency with Cronbach’s α of 0.82. Construct validity of the questionnaire was established using principal factor analysis with varimax rotation. The correlation matrix was used to assess the degree of correlation. Kaiser–Meyer–Olkin value (0.78) with Bartlett test of sphericity ($p < 0.01$) established adequacy of the sample. Kaiser’s criterion was used to enter thirty-two items into the analysis. The questionnaire and the scoring scheme are enclosed in Appendix A. This questionnaire is free to use. The demographic details of 179 participants are presented in Table 2. The responses of the participants in the respective domains have been given in the Supplementary table 1.

4. Discussion

As the world is going through the process of “Covidisation”, significant changes in medical, economic, social and behavioural health are expected [11]. “The Bandwagon Effect” and “The Health Belief Model” play an important role in determining the compliance to these changes even after the flattening of the curve [12,13].

We developed a comprehensive, free to use and user-friendly tool comprising 33 questions involving five domains namely, Fear and Anxiety (four items), Household confinement (ten items),

Table 2
Socio-Demographic details of participants (n = 179).

Characteristics	n	(%)
Gender		
Male	92	51.4
Female	87	48.6
Place of Residence		
Metropolitan	102	57.0
Small cities	77	43.0
Occupation		
Retired	13	7.3
Service	91	50.8
Students	75	41.9
Marital Status		
Married	77	43.0
Unmarried	102	57.0
Status of COVID-19 infection		
Self-Infected		
yes	24	13.5
No	155	86.5
Family member Infected		
Yes	83	46.4
No	96	53.6

Lifestyle Modification (five items), Preventive practices (thirteen items) and Coping strategies (two items).

The fear of getting infected and inappropriate information (causing confusion among the individuals) is covered in the Fear and Anxiety domain. Inability to attend social gatherings, religious ceremonies and social boycott can also cause distress in the lives of individuals, depicted in the Household confinement domain. The changes in lifestyle such as in dietary pattern, sleep pattern and physical exercises is understood from the Lifestyle Modification domain. Lastly, the preventive measures taken for the protection from the disease and ways to reduce the COVID related stress and fear can be studied in Preventive practices and Coping strategies domain.

Researchers have tried to study these changes by developing questionnaires to assess changes in lifestyle related behaviours, preventive practices and psycho-social functioning [14–18]. On the other hand, tools to assess social and behavioural changes have also been developed in the west but, their reliability and validity stands questionable and cannot be applied on the Indian population due to socio-cultural differences. Therefore, this tool can be used on the Indian as well as the South-East Asian countries.

The limitations of the study include inability to determine the concurrent/predictive validity, and limiting the sample primarily to those who could be accessed through online invites. Despite the limitations, it is the first tool to be developed to assess the socio-behavioural changes due to COVID among the general population. The tool has good internal consistency, content validity, face validity and construct validity. The questionnaire is short and can be self-administered in approximately 10 min. This tool will help in assessing the changes in the social and the behavioural domain and will help health professionals and educators to assess the outcomes of strategies and interventions to improve the adherence to

Table 1
Steps involved in Questionnaire development.

Step	Nature of activity	Methods	Number of items at the end of step	Addition or subtraction
1	Development of construct	Literature review	27	-
2	Development of construct	FGDs	37	Addition of 10 items
3	Item generation	Develop items	37	
4	Establishment of face and content validity	Expert validation	34	Deletion of 3 items
5	Cognitive interviewing	Pilot study	33	Deletion of 1 item
6	Establishment of Construct validity	Item analysis and Factor analysis	33	-

behavioural measures and reduce the psychological impact due to these changes.

Declaration of competing interest

The authors declare that they have no conflict of interest.

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Appendix A. Questionnaire to assess socio-behavioural impact of COVID-19 on the general population

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.dsx.2021.02.019>.

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