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**Rupanagudi Unesha Fareq**  
Ph.D. Scholar, Department of  
Family Resource Management,  
College of Home Science, GB,  
Pant University of Agriculture  
and Technology, Pantnagar,  
Uttarakhand, India

**Dr. Deepa Vinay**  
Professor, Department of Family  
Resource Management, College  
of Home Science, GB, Pant  
University of Agriculture and  
Technology, Pantnagar,  
Uttarakhand, India

**Rupanagudi Beena Fareq**  
Ph.D. Scholar, Department of  
Apparel and Textile Sciences,  
College of Community Science,  
University of Agricultural  
Sciences, Dharwad, Karnataka,  
India

**Corresponding Author:**  
**Rupanagudi Unesha Fareq**  
Ph.D. Scholar, Department of  
Family Resource Management,  
College of Home Science, GB,  
Pant University of Agriculture  
and Technology, Pantnagar,  
Uttarakhand, India

## Development of scale to study the behaviour assessment of COVID recovered patients towards accurate diagnosis and effective treatment

**Rupanagudi Unesha Fareq, Dr. Deepa Vinay and Rupanagudi Beena Fareq**

### Abstract

Coronavirus disease was discovered in late December 2019 in Wuhan, China. The World Health Organisation (WHO) referred to a coronavirus as a 2019 novel coronavirus. The virus's current scientific name is severe acute respiratory syndrome coronavirus 2. The objective of the study is to know behaviour assessment of COVID recovered patients towards accurate diagnosis and effective treatment. The area selected to conduct the study is the Kurnool district of Andhra Pradesh. The results revealed that the scale developed to know the behaviour assessment COVID recovered patients towards accurate diagnosis and effective treatment was found adequate reliability (0.70) and validity to conduct and evaluate the study. After administering the scale to COVID recovered patients, maximum patients in the study exhibited a high level (97%) of behaviour assessment towards diagnosis and treatment thus denoting the good knowledge and awareness about the diagnosis and treatment they have undergone.

**Keywords:** Coronavirus disease, diagnosis, treatment, behaviour assessment, COVID patients

### Introduction

Coronavirus disease (COVID-19) is a viral infection caused by a newly discovered coronavirus. The majority of people infected with the COVID-19 virus will experience mild to moderate respiratory illness and will recover without the need for special care. People over the age of 65, as well as those with medical conditions such as cardiovascular disease, diabetes, chronic respiratory disease, and cancer, are more likely to develop serious illnesses. The best way to prevent and slow the spread of the COVID-19 virus is to educate yourself about the virus, the disease it causes, and how it spreads.

COVID-19 has become a global pandemic, infecting people from almost every country on the planet. People's survival and livelihoods are under threat. No country is receiving significant relief or solutions from this pandemic, instead educating their citizens and encouraging them to take precautions by changing their lifestyle. The general public's behaviour will most likely have a significant impact on the progression of the coronavirus pandemic, and human behaviour can be influenced by people's knowledge and perceptions of the COVID-19 pandemic (Balkhi *et al.* 2020) [2].

People are becoming panicked, emotionally unsecured, depressed, and in a state of confusion, unaware of government facilities, regarding reliable news sources, symptoms of COVID-19 and its prevention with the cure, awareness level of health facilities provided by the government, general awareness about coronavirus, their symptoms for infection, and prevention to common people.

Because most research is currently focused on disease diagnosis and treatment, the mental health and behaviour aspects of the outbreak are being prioritised in order to understand the behavioural changes in the affected population as a result of COVID-19 (a Wang *et al.* 2020; b Wang *et al.* 2020; Guo *et al.* 2020; and Giwa *et al.* 2020) [12, 13, 4, 3]. In view of this, this study attempted to know behaviour assessment of COVID recovered patients towards accurate diagnosis and effective treatment.

Behavioural assessment is a tool used in psychology for observing, describing, explaining, and predicting behaviour. Behavioural assessment is the process of assessing and measuring various aspects of behaviour to determine why a particular behaviour occurs and what causes it. These would include overt behaviours, feelings, perceptions, and thoughts, as well as the variables that control them, which could come from within or without the individual.

The Behavioural assessment is concerned with what a person does rather than what he or she has or is. It is also claimed that Behavioural assessment is more of an exploratory activity aimed at discovering the range of procedures used to understand children, adults, groups, and so on. This definition emphasises a hypothesis-testing problem-solving assessment model, with the goal of identifying appropriate intervention strategies to correct specified Behavioural problems (Haynes and Joseph, 2008)<sup>[6]</sup>.

A fundamental assumption in behavioral assessment is that measurement must concentrate on observable behaviours in a variety of situations (Kratochwill and Shapiro, 2000)<sup>[7]</sup>. Because environmental and ecological variables are assumed to have a direct influence on a person's thoughts, behaviours, and feelings, evaluation occurs across multiple settings. These various environmental characteristics assist psychologists in developing hypotheses regarding the development and maintenance of various behaviours (Mash and Terdal, 1997)<sup>[9]</sup>.

Singh *et al.* (2020)<sup>[11]</sup> conducted a study to assess COVID19 awareness, threat, symptoms, and prevention among Indians. The respondents are well informed about the COVID19 outbreak and its preventive measures; 98% believe the virus spreads from person to person, and 95% believe the disease is caused by a virus. With a positive attitude towards coronavirus, people understand the importance of social distancing and other preventive measures prescribed by the government. Respondents rely on trusted sources for corona information, are confident in their ability to defeat disease, but expressed concern about the virus, its common symptoms and prevention, government testing, and medical facilities.

Gutu *et al.* (2021)<sup>[5]</sup> investigated preventive behaviour and associated factors for COVID-19 among Ethiopians. The majority of respondents (84.7%) believe the disease is extremely dangerous, and 450 (71.0%) believe they are at high risk. More than 17% of respondents have adequate knowledge. Respondents with sufficient knowledge of COVID-19 were approximately twice as likely as those with insufficient knowledge to practice good preventive behaviour. Urban residents were 3.3 times more likely than rural residents to engage in good preventive behaviour. Respondents who used social media as a source of information were more than twice as likely to engage in good preventive behaviour as those who did not.

Al-Rasheedi *et al.* (2021)<sup>[1]</sup> conducted a study that examined and evaluated the general public's and healthcare providers' awareness in Saudi Arabia. Overall, 129 (99%) of the 130 participants are aware of COVID-19, with 116 (90%) recognising it as a respiratory disease and 100% recognising it as a contagious disease. Approximately 94% of the participants correctly identified the virus's incubation period. Participants aged 20-40 demonstrated higher levels of awareness than other age groups. Furthermore, government employees demonstrated higher levels of awareness than other professional groups.

Narayana *et al.* (2020)<sup>[10]</sup> conducted a study to assess the general public's knowledge, perception, and practice of

COVID-19 in India. Television (74.5%) and social media (71.0%) were the most common sources of COVID-19 information. The majority of respondents correctly identified COVID-19 knowledge (74.7%), perception (57.6%), and practises (88.1%). Respondents over the age of 40, with a higher education level, living in cities, and pursuing healthcare professions had higher knowledge, perception, and practise scores on the COVID-19. The study concludes that, while the majority of respondents demonstrated good knowledge and right practices regarding the COVID-19 pandemic, there was a gap in the right perception of underlying myths and facts about COVID-19. Providing educational programmes and disseminating WHO myth busters through the media or social networks can help to clear up underlying misconceptions about COVID-19 and improve public knowledge, perception, and practises.

Kushal *et al.* (2021)<sup>[8]</sup> sought to assess medical and allied health science students' knowledge and perceptions of COVID-19. Students with a pharmacy background (45.73%) outnumbered those with a medical (22.52%), physiotherapy, nursing, or dental background. The majority of participants had adequate knowledge, while about 18% had only a hazy understanding of the symptoms of severe COVID-19 cases. Students had a positive perception of COVID-19 prevention and control, with only a few incorrect responses related to the use of herbal medicines or garlic. Approximately half of those polled correctly stated that antibiotics and vaccines are currently ineffective against COVID-19 infection.

**Methodology**

The area selected to conduct the study is the Kurnool district of Andhra Pradesh. From the selected study locations, the sample of 30 COVID recovered patients who met the criteria and were willing to participate in the study were chosen as a sample. A random sampling method was adopted to select the locations to draw the sample. A scale was developed to measure behaviour assessment of COVID recovered patients towards accurate diagnosis and treatment. Listing of items on various aspects of COVID-19 diagnoses and treatment consisting of various dimensions of COVID-19 such as symptoms, transmission, diagnosis and treatment were collected through a detailed literature survey from primary and secondary sources of information. A total of 94 items were developed in the scale covering all the dimensions of COVID-19 mentioned in Table1.

**Table 1:** List of items developed for the scale development

S.no	Dimensions	Items
1	COVID Transmission	7
2	Symptoms	14
3	Severity of symptoms	13
4	Diagnosis	23
5	Treatment	21
6	Medication	12
7	Preventive measures	4

The measuring instrument's content validity was evaluated with the assistance of experts from the Department of Family Resource Management, College of Home Science, Pantnagar. The experts were asked to evaluate the statements for language, clarity, and topic coverage, rating each item as clear, ambiguous, correct, or incorrect. Items marked as clear and correct by 80% or more of the judges were kept, while items marked incorrect and ambiguous were removed from the scale. After the content validity done by experts, a total of

44 items were found clear and correct and the remaining items are found to be ambiguous and incorrect and were discarded. The scale with 44 items is given to a random sample of 33 respondents. The respondent indicates his/her agreement or disagreement with each statement in the instrument. Each response is given a numerical score, indicating its favorableness or unfavorableness, and the scores are calculated to measure the respondent's attitude. The Likert format was used to indicate the respondent's degree of agreement with a particular item. Respondents were asked to respond to items on 5 point scale with scores 5,4,3,2 and 1 for Strongly Agree, Agree, Neutral, and Disagree and strongly disagree. Item analysis was done to assess the quality and effectiveness of the items. Statements that best meet this sort of discrimination test are included in the final instrument. The discrimination index (DI) measures how well an item can differentiate between high scoring people and low scoring people. For each item, it is a measure based on the comparison of performance between higher and lower score people in the given test as a whole.

**The formula of the Discrimination index is as follows:**

$$D_I = \frac{C_{UG} - C_{LG}}{D}$$

$D_I$  = Discrimination index value.

$C_{UG}$  = Number of people selecting the correct answer in the upper group.

$C_{LG}$  = Number of people selecting the correct answer in the lower group

$D$  = Number of people in total.

The item whose value was found 0.40 and above were treated as good items given in Table 2.

**Table 2:** Item discrimination index range

Index range	Discrimination level
0.19 and below	Poor item, Item should be eliminated or needed to be revised.
0.20-0.29	The marginal item needs some revision
0.30-0.39	Reasonably good item but possibly for improvement
0.40 and above	Very good item

After collecting the data from respondents the items developed in the scale were subjected to item discrimination and found item discrimination index for items. A total of 19 items out of 44 items were found a value of 0.04 and were retained in the scale (Table 3).

**Table 3:** List of items with Discrimination values

Item no	Statements	Discrimination Value
1	Transmission of the COVID-19 is possible at conditions of close contact with an infected person who has symptoms	0.56
2	when aerosols or droplets containing the virus are inhaled or come directly into contact with the eyes, nose, or mouth the virus can spread the virus	0.89
3	Dry cough and fatigue are the symptoms of COVID-19	0.3
4	Fever is a common symptom of COVID-19	0.89
5	Symptoms of COVID-19 infection may appear in as few as 2 days or as long as 14 after exposure	0.89
6.	Mild Symptoms can be effectively managed at home	0.66
7.	Symptoms such as shortness of breath can be severe and required ventilation	0.77
8.	Complications leading to death in COVID patients is due to Respiratory problems	0.67
9.	In Quarantine one remain separated in designated facility or at home for 14 days from others as they might been exposed to the virus and may be infected	0.6
10	Isolation is used for people with COVID-19 symptoms or who have tested positive for the virus	0.44
11.	RT-PCR and Rapid Antigen tests are used to know a current infection.	0.78
12	RT-PCR and Rapid tests detect the presence of viral RNA in patient samples collected from the nose and/or throat with a swab	0.88
13	Rapid antigen tests can produce results in minutes.	1.56
14	Pulse oximeter is a painless and reliable way to measure a person's blood oxygen levels	0.89
15	Patients must be in communication with a medical staff and promptly report in case of any worsening of symptoms.	0.4
16	Perform warm water gargles or take steam inhalation twice a day.	0.7
17	Remdesivir can be used to people who are hospitalized with COVID-19 who are on mechanical ventilators or need supplemental oxygen.	0.77
18	Plasma with high antibodies must be used to treat some hospitalized people ill with COVID-19 who have weakened immune systems	0.88
19	The Covishield vaccine and Covaxin vaccine is used for prevention of corona virus infection to the people	0.66

After item analysis, the scale was subjected to a test of reliability to find out its consistency in providing results on repeated use. The reliability was found by calculating the correlation coefficient by the split half method. Split-half reliability is a statistical method used to measure the consistency of the scores of a test. As can be inferred from its name, the method involves splitting a test into halves and correlating scores on the two halves of the test by taking odd-numbered and even-numbered items and comparing the results obtained from the two subsets of items and calculated the Karl Pearson coefficient to know the correlation between two halves and the correlation value was found (0.68).

Karl Pearson correlation coefficient was calculated by using the formula

$$r = \frac{\sum(x-\bar{x})(y-\bar{y})}{\sqrt{\sum(x-\bar{x})^2} \sqrt{\sum(y-\bar{y})^2}}$$

Where,  $\bar{x}$  = mean of X variable  
 $\bar{y}$  = mean of Y variable

The spearman brown formula was used to test the reliability and found value of 0.75 which indicate adequate reliability (Table 4). The Spearman Brown formula used for calculating reliability.

$$R = \frac{2r}{1+r}$$

R = Reliability of the test

R = Correlation between the hases calculated using Karl Pearson Coefficient

**Table 4:** Interpretation of Reliability

Reliability coefficient	Interpretation
0.90 and above	Excellent
0.80-0.90	Good
0.70-0.80	Adequate
below0.70	May have limited applicability

The final developed scale was administered on the random sample of COVID recovered patients. The scale was developed in Google forms and was sent to respondents personally by the researcher.

The scale was standardized on the lines of the likert summated scale. Respondents are asked to indicate their level of agreement with a given statement. Frequency, A Behaviour assessment scale developed with nineteen items were given to COVID recovered patients to know their perception towards accurate diagnosis and effective treatment The mean scores, frequency and standard deviation were calculated for each item and were discussed (Table 5). The findings of the present investigation as obtained on the analysis of the data collected are tabulated and discussed. Behaviour assessment of COVID recovered patients towards accurate diagnosis and effective treatment revealed that respondents ‘strongly agreed’ for the transmission of COVID-19 is possible at conditions of close contact with an infected person who has symptoms (53.33%), when aerosels or droplets containing the virus are inhaled or come directly into contact with the eyes, nose, or mouth the

virus can spread the virus (50%), Quarantine is which one remain separated in designated facility or at home for 14 days from others as they might been exposed to the virus and may be infected (50%) and 43.33 per cent expressed that Isolation is used for people with COVID-19 symptoms or who have tested positive for the virus and 50 percent felt that RT-PCR and Rapid Antigen tests are used to know a current infection and 56.67 per cent expressed that Rapid antigen tests can produce results in minutes, 56.67 per cent Pulse oximeter is a painless and reliable way to measure a person's blood oxygen levels used by medical officials 0.56.67 per cent Perform warm water gargles or take steam inhalation twice a day.

Out of the total, the respondents expressed ‘agreed’ that Dry cough and fatigue are the symptoms of COVID-19 (33.33%), RT-PCR and Rapid tests detect the presence of viral RNA in patient samples collected from the nose and/or throat with a swab (46.67%), Plasma with high antibodies must be used to treat some hospitalized people ill with COVID-19 who have weakened immune systems (33.33%).The respondents felt ‘neutral’ for Fever as a common symptom of COVID 19 (43.3%),Symptoms of COVID-19 infection may appear in as few as 2 days or as long as 14 after exposure (36.7%),Mild Symptoms can be effectively managed at home (50%), Complications leading to death in COVID patients is due to Respiratory problems (43.3%), Patients must be in communication with a medical staff and promptly report in case of any worsening of symptoms(36.7%),Remdesivir can be used to people who are hospitalized with COVID-19 who are on mechanical ventilators or need supplemental oxygen (43.3%), The Covishield vaccine and Covaxin vaccine is used for prevention of corona virus infection to the people (40%).

**Table 5:** Frequency and Percentage distribution of respondents N = 30

S. No	Statements	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Mean	SD	Mean ± SD
		N	%	N	%	N	%	N	%	N	%			
1	Transmission of the COVID 19 is possible at conditions of close contact with an infected person who has symptoms	16	53.33	12	40	2	6.67	0	0	0	0	4.46	0.62	4.46±0.62
2	when aerosels or droplets containing the virus are inhaled or come directly into contact with the eyes, nose, or mouth the virus can spread the virus	15	50	9	30	6	20	0	0	0	0	4.3	0.79	4.3±0.79
3	Dry cough and fatigue are the symptoms of COVID-19	7	23.33	10	33.33	7	23.3	4	13.3	2	6.67	3.5	1.19	3.5±1.19
4	Fever is a common symptom of COVID 19	6	20	8	26.67	13	43.3	3	10	0	0	3.5	0.9	3.5±0.99
5	Symptoms of COVID-19 infection may appear in as few as 2 days or as long as 14 after exposure	4	13.33	10	33.33	11	36.7	3	10	2	6.67	3.3	1.06	3.3±1.06
6	Mild Symptoms can be effectively managed at home	5	16.67	7	23.33	15	50	3	10	0	0	3.4	0.8	3.4±0.8
7	Symptoms such as shortness of breath can be severe and required ventilation	11	36.67	12	40	7	23.3	0	0	0	0	4.13	0.77	4.13±0.77
8	Complications leading to death in COVID patients is due to Respiratory problems	8	26.67	9	30	13	43.3	0	0	0	0	3.83	0.83	3.83±0.83
9	In Quarantine one remain separated in designated facility or at home for 14 days from others as they might been exposed to the virus and may be infected	15	50	10	33.33	5	16.7	0	0	0	0	4.33	0.75	4.33±0.75
10	Isolation is used for people with COVID-19 symptoms or who have tested positive for the virus	13	43.33	11	36.67	6	20	0	0	0	0	4.23	0.77	4.23±0.77
11	RT-PCR and Rapid Antigen tests are used to know a current infection.	15	50	15	50	0	0	0	0	0	0	4.5	0.5	4.5±0.5
12	RT-PCR and Rapid tests detect the presence of viral RNA in patient samples collected from the nose and/or throat with a swab	10	33.33	14	46.67	6	20	0	0	0	0	4.13	0.7	4.13±0.7
13	Rapid antigen tests can produce results in minutes.	17	56.67	11	36.67	2	6.67	0	0	0	0	4.43	0.62	4.43±0.62
14	Pulse oximeter is a painless and reliable way to measure a person's blood oxygen levels	17	56.67	4	13.33	9	30	0	0	0	0	4.26	0.90	4.26±0.90
15	Patients must be in communication with a treating physician and promptly report in case of any worsening.	10	33.33	9	30	11	36.7	0	0	0	0	3.96	0.85	3.96±0.85
16	Perform warm water gargles or take steam inhalation twice a day.	17	56.67	10	33.33	3	10	0	0	0	0	4.36	0.66	4.36±0.66
17	Remdesivir can be used to people who are hospitalized with COVID-19 who are on mechanical ventilators or need supplemental oxygen.	10	33.33	6	20	13	43.3	1	3.33	0	0	3.8	0.92	3.8±0.92
18	Plasma with high antibodies must be used to treat some hospitalized people ill with COVID-19 who have weakened immune systems	8	26.67	10	33.33	8	26.7	3	10	1	3.33	3.7	1.08	3.7±1.08
19	The Covishield vaccine and Covaxin vaccine is used for prevention of corona virus infection to the people	7	23.33	11	36.67	12	40	0	0	0	0	3.83	0.79	3.83±0.79

### Interpretation and distribution of respondent's behaviour assessment towards diagnosis and treatment

An attempt was made to find out the extent of respondents behaviour assessment towards diagnosis and treatment in terms of low, moderate and high. The total score of the behaviour assessment scale of each respondent was calculated. The range of the behaviour assessment scale was from 19 as minimum and 95 as maximum. It was divided into three categories i.e. low level from 19-44, whereas medium from 45-69 and high attitude from 70-95. The data of respondent's behaviour assessment towards diagnosis and treatment revealed that there were 90 per cent of respondents were found to have high level behaviour assessment, whereas 10 per cent had moderate towards accurate diagnosis and effective treatment (Table 6).

**Table 6:** Interpretation and distribution of respondent's behaviour assessment towards diagnosis and treatment

S.no	Category	Frequency	Percentage
1	High (70-95)	27	90
2	Moderate (45-69)	3	10
3	Low (19-44)	0	0

### Conclusion

The scale developed to know the behaviour assessment COVID recovered patients towards accurate diagnosis and effective treatment was found adequate reliability (0.70) and validity to conduct and evaluate the study. After administering the scale to COVID recovered patients, maximum patients in the study exhibited a high level (97%) of behaviour assessment towards diagnosis and treatment thus denoting the good knowledge and awareness about the diagnosis and treatment they have undergone.

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