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Characteristics of People Who Do Not Disclose Positive COVID-19 Infection

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In Brief

COVID-19 is an emerging infectious disease, first recognized in Wuhan, China, in late 2019 (1, 2). The disease is a world-wide pandemic and is considered a significant threat to population health. COVID-19 is usually transmitted from person to person through nasal secretions and droplets (3). The median incubation period is estimated to be 5.1 days. Clinical manifestations of COVID-19 include fever, cough, and dyspnea (4, 5). However, loss of smell and taste, and in some cases, diarrhea have also been reported (6). The number of affected people is growing. Based on the latest report, 524,130,345 confirmed cases of this disease have been reported worldwide so far, and In Iran, 7,228,786 confirmed cases have been reported, of which 141,236 led to death (7). The growing number of cases and the severity of consequences speak to the importance of prevention strategies(8).

The psychological consequences of COVID-19 (9, 10) are likely to be broad and affect millions of people (11). Several psycho-social effects of Covid-19 have been reported, including: stress, anxiety (12), fear (13, 14), lower mental health (14), stigma (15), and loss of job (16). Social stigma against persons infected with COVID-19 and their family members has been observed (17). As such, some people may under-report or hide their COVID-19 status. In one study (18), disclosure status ranged from "willing" to "selective" to "refusal" to disclose. Non-disclosure is associated with social stigma (19).

Given the severity of health-related outcomes resulting from non-disclosure of COVID-19 infection, it is important to gain a better understanding of this issue. The aim of this study was to determine the characteristics of those who do not disclose their COVID-19 disease status.

This was a cross-sectional, correlational study using secondary data (Abolnezhadian et al., 2021). COVID-19-positive patients were recruited (N = 262) from hospital/healthcare facilities in Khuzestan, Iran from March to April of 2021.

↑What is "already known" in this topic:
The issue of non-disclosure is commonly reported during the outbreak of infectious diseases. Most of the prior work on disclosure relates to human immunodeficiency virus (HIV) status. Considering the severity of health-related outcomes resulting from non-disclosure of Coronavirus disease-2019 (COVID-19) infection, this study aimed to determine the characteristics of those who did not disclose their positive COVID-19 status in an online survey.

→What this article adds:
Many patients with COVID-19 did not disclose their disease status, and this behavior was associated with demographic characteristics. Health education and prevention campaigns may be designed and targeted for persons who may be particularly at risk to under-report COVID-19 status.

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A multi-stage sampling method was used. First, Khuzestan Province was divided into 20 regions, and 10 regions were randomly selected (using a method similar to flipping a coin). Then, among healthcare centers located in each region, 2 health centers were selected randomly. The original study(20) enrollment N = 1256. The population in each of the 10 regions was conceptualized as comprising a proportion of the total population among the 10 regions. As an example, if "Region A" had a population of 60,000 and the population across all 10 regions was 700,000, then Region A's proportion of the whole was 8.57%. Therefore, Region A would comprise 8.57% of the targeted study sample or N = 92 participants. Each health center provided half of the region's study sample. Based on the health center flow of persons meeting inclusion criteria and the number of patients per center desired over the recruitment period (accounting for refusal rate), the percent of patients per week to be called for study participation was obtained. A random numbers generator was used to select patients at this rate per week to be called about the study.

Inclusion criteria in the original study were: Age 18 years and above, ability to read and write in Persian, having an internet connection, and being a resident of Khuzestan. Positive COVID-19 status was confirmed via a positive polymerase chain reaction (PCR) test and medical diagnosis.

Healthcare staff had a list of persons seen in the health centers and called them regarding interest in the study. Participants were contacted within the first week of being found positive for COVID-19. Participants were informed that the purpose of the study was to improve strategies to control COVID-19. They were informed that whether or not they participated, their healthcare would not be impacted, and they were informed that the information they provided would be kept confidential and private. After explaining the objectives of the research and obtaining informed consent, the link to the study questionnaire was sent to be completed online. All procedures were reviewed and approved by an ethics committee; No: IR.AJUMS.REC.1399.875.

The data collection instrument was described in a prior published study (Abolnezhadian et al., 2021). A sample question addressing COVID-19 behaviors was: "Do you wash your hands to reduce the spread of COVID-19?" Response options were Yes or No. The validity of the questionnaire was confirmed using content validity ratio (CVR) and content validity index (CVI) methods (21). The reliability of questions assessing COVID-19 behaviors was Cronbach's alpha = 0.9 (Abolnezhadian et al., 2021).

Results were presented in terms of frequencies and percentages for categorical variables. Otherwise means and standard deviations (M, SD) were presented. Univariate logistic regression was used to examine the relationship between predictor variables and COVID-19 disclosure. Odds ratios (ORs) were calculated and presented with 95% confidence intervals (CIs). Statistical analysis was performed using the statistical software Statistical Package for Social Sciences (SPSS) 18.0.0. (SPSS Inc. Chicago, IL, USA).

The mean age was 44.60±13.48 years. Table 1 provides the demographic characteristics of participants by disclosure group. Logistic regression revealed significant results for gender, residence, employment and economic status. Additionally, about 44% of people self-rated themselves as not-having COVID-19 infection.

The aim of this study was to determine the characteristics of those who do not disclose their positive COVID-19. Results show that gender, residence, employment and eco-

Table 1. Disclosure status by demographics and logistic regression results predicting non-disclosure

	Disclosed a Positive COVID-19 Result[a]	Did Not Disclose a Positive COVID-19 Result[a]	Logistic Regressions, Crude OR (95% CI)	*P*
Age (years)	45.86±14.70	43.79±14.56	0.99 (0.97,1.00)	0.263
Gender				
Woman	80 (57.1)	51 (42.9)	Ref	0.022
Man	60 (42.9)	68 (57.1)	1.77 (1.08,2.91)	
Residence				
Rural	11 (8)	2 (1.7)	Ref	0.037
Urban	127 (92)	117 (98.3)	5.06 (1.10,23.34)	
Education				0.336
University degree	78 (56.5)	55 (47.4)	Ref	
Primary	51 (37.0)	53 (45.7)	0.79 (0.28 , 2.18)	
Illiterate	9 (6.5)	8 (6.9)	0.67 (0.40 , 1.13)	
Marriage				
Single/ Divorced	21 (15)	24 (20.3)	Ref	0.262
Married	119 (85)	94 (79.7)	0.69 (0.36,1.31)	
Employment				0.014
Not-employed	3 (2.1)	12 (9.9)	Ref	
Employed	138 (97.9)	109 (90.1)	5.06 (1.39 , 18.39)	
Economic status				0.038
Poor	22 (16.1)	30 (25.4)	Ref	
Moderate	60 (43.8)	57 (48.3)	0.69 (0.36,1.34)	
Good	55 (40.1)	31 (26.3)	0.41 (0.20,0.83)	
Comorbidity				
No	80 (56.7)	77 (63.6)	Ref	0.256
Yes	61 (43.3)	44 (36.4)	1.33 (0.81,2.19)	

OR = Odds Ration, CI = Confidence Interval, % = percent, COVID-19 = Coronavirus disease-2019, Ref = reference group. [a] = Data presented as N (%), except for age;(M±SD).

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nomic status are significantly associated with non-disclosure. Although prior research indicated a mixture of results regarding infectious disease disclosure (22), other work has indicated that women are more likely to disclose their status (23), which is consistent with the current study. Similarly, previous research indicated that disease disclosure might be different among rural vs. urban residents (24), and in the current study, urban residents were more likely to not disclose positive COVID-19 status. Also as found in the current study, employed persons were more likely to not disclose positive COVID-19 status. On the other hand, the odds of not disclosing decreased for persons of moderate and good economic status. It may be that those with employment fear losing their jobs should they disclose being positive for COVID-19.

High rates of non-disclosure (44%) in the current study might be due to respondent understanding of what it means to be positive for COVID-19. Participants were approached within the first week of COVID-19 diagnosis, but because some might be asymptomatic or begin feeling better, they may report not having COVID-19. Differences between patient and clinician perceptions of medical status have been reported (25).

This is the first study on the disclosure of COVID-19 status to an online survey. Most of the prior work on disclosure relates to human immunodeficiency virus (HIV) status. Use of surveys, including convenient online surveys, provides an efficient avenue by which population-level health status may be tracked. Results suggest important ways to tailor public health messaging to groups at particular risk for non-disclosure of positive status, including outreach and education to men, persons residing in urban areas, employed persons and those who are relatively poor.

The study did not assess anticipated family and friend reactions to positive COVID-10 status, which may influence disclosure (e.g., a poor response may discourage disclosure, whereas a supportive response may encourage disclosure to others). The study failed to identify beliefs behind disclosure (e.g., why not disclose vs. why disclose). Exploring these factors may provide more avenues to encourage disclosure. In addition, this study examined only disclosure to an online survey, not to a health professional to provide direct assistance or to significant others. On the other hand, participants understood the purpose of the study was to improve strategies to control COVID-19, an important public health endeavor, and as such, might have been inclined to disclose positive status.

This study showed that many patients with COVID-19 do not disclose positive status, and this was associated with some demographic characteristics. Designing targeted health education and prevention programming may assist in mitigating non-disclosure.

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Conflict of Interests

The authors declare that they have no competing interests.

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