Original Article

Non-Compliance with COVID-19 Screening in Pakistan: A Cross-Sectional Survey

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Abstract

Objectives: To quantify the non-complaint portion of the general public – not wanting to be screened for COVID-19 and find the reason for this non-compliance, in the general public of Rawalpindi Pakistan.
Study Design: Cross-sectional survey.
Place and Duration of Study: General public of Rawalpindi, Pakistan. From June 19, 2020, to June 21, 2020.
Methodology: A questionnaire was constructed based on a local study, it was injected to the accessible online population through Google Forms. Surveyors collected data from the illiterate population on printed proforma. A sample of 1108 was collected. IBM® SPSS® was used for data analysis. For categorical data, frequencies and percentages were calculated. A Chi-square test was applied for statistical significance.
Results: 45.3% of participants were females, 54.7% were males. 37.9% of participants were married and 62.1% were unmarried. 3.8% were illiterate, 40.4% were matriculated and 47.1% had education higher than intermediate. 38.3% was non-compliant population – didn't want to get screened for COVID-19. 30.7% were non-compliant because of *'fear of isolation/ quarantine with other COVID-19 patients, leading to worsening of disease'* followed by 26.9% who *'don't trust the reliability of the test'*. Gender and Education level variables were statistically significant in determining non-compliance. Marital status was found non-significant.
Conclusion: A significant portion of the population i.e. 38.3% showed non-compliance with COVID-19 screening, which was statistically associated with gender and education level.
Keywords: COVID-19 screening, Non-compliance, gender, education level.

Introduction

Coronavirus disease 2019 (COVID-19) is a viral infectious illness caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It was first reported in the Wuhan district of Hubei Province of China in December 2019.[1] First, the known case may be traced back to as early as 17 November 2019 in the Hubei province of China.[2] World Health Organization (WHO) declared COIVD-19 as pandemic on March 11, 2020, at 16:26:53 (UTC).[3] Globally, as of June 6, 2020, 07:33:08 (UTC), 6,711,318 cases of COIVD-19 were reported with 2,986,631 recoveries and 393,600 deaths.[4] In Pakistan, as of June 5, 2020, 03:38:00 (UTC), 89,249 cases of COIVD-19 were reported with 31,198 recoveries and 1,838 deaths.[5]

Symptoms usually appear 2-14 days after exposure and commonly include fever, cough, fatigue, body aches, diarrhea, nausea, and vomiting. Emergency symptoms include shortness of breath, chest tightness, cyanosis, and altered sensorium.[6] Anosmia has also been found in some of the patients.[7] Most of the cases result in mild disease, but some cases progress to acute respiratory distress syndrome (ARDS), Multi-organ failure, septic shock & hypercoagulable state; which are often fatal.[8,9]

COVID-19 is spread by droplets and transmission is possible when people are in close contact. The main way of transmission is when droplets produced by an infected person (symptomatic or asymptomatic) through coughing, sneezing, or talking are inhaled by healthy individuals. These droplets may land on some surface, touching that surface then touching one's mouth, nose, or possibly eyes, which can also lead to transmission. Although the later way is not well established yet. The basic reproduction number (R_0) of COVID-19 is estimated to be 2.5, which implies that it spreads more efficiently than influenza.[10] Unfortunately, there is no vaccine or specific treatment available for COVID-19 yet. According to the Centers for Disease Control and Prevention (CDC) and WHO, precaution is the best way to fight this pandemic. Both CDC and WHO recommend face covering, frequent hand washing, routinely cleaning and disinfecting surfaces, maintaining good social distance.[11] Lockdowns have been in place in many countries, including Pakistan, to prevent the spread and implement "flattening the curve", in an attempt to decrease mortality and economic impact.[12] As lockdown measures are being relaxed in Pakistan, effective containment of the disease has become difficult.[13] This is probably because approximately 40% of COVID-19 patients are asymptomatic, who aren't in any quarantine and are freely socializing, spreading the disease among the healthy community.[14] Even after global efforts, the vaccine may not be available until 2021.[15] Therefore, it is imperative that screening is done nationally on a mass level to locate and isolate people before they develop symptoms, which would help flatten the curve and decrease COVID-19 spread. In Pakistan as of June 5, 2020 03:27:00 (UTC), 22.4% (4,896/22,812) of COIVD-19 tests turned out positive.[16] According to WHO, if 10% of the subjects tested positive then more testing needs to be done.[17] Mass screening is one of the most important interventions to limit the spread.[18] Lack of resources has prevented mass screening globally, but it is not the only reason. In the United States, a report states that there are not enough people to test.[19] While another report discusses various incentives to motivate people to get tested for COVID-19.[20]

With this background in knowledge, this study was conducted to quantify the non-complaint portion of the general public – not wanting to be screened and find out why not. This study would help assess the magnitude of the said issue and help policymakers in planning strategies against it.

Methodology

This cross-sectional survey was conducted on the public of Rawalpindi, Pakistan. Convenient sampling technique was used, online questionnaire made on Google Forms were sent to accessible contacts on social media. A printed questionnaire was filled out from the illiterate population by surveyors. Consent was taking before filling of the questionnaire. The questionnaire included five questions regarding gender, marital status, education level, willingness for COVID-19 screening, and specific reason for not getting tested (Table 1). This questionnaire was constructed based on a local study[21]. Urdu translation of the questionnaire was also provided to reduce the communication barrier. Those who could not read, and could not write anything other than their name were considered illiterate. Inclusion criteria included; adults of age between 20 – 70 years, residents of Rawalpindi, who showed no symptoms of COVID-19, had no foreign travel or COVID-19 contact history. Exclusion criterion included; below 20 years or above 70 years, resident of areas other than Rawalpindi, history of symptoms, foreign travel, or contact history

of COVID-19. A sample size of 385 was calculated; using a confidence level of 95%, a margin of error 5%, and the anticipated percentage frequency was taken as 50%. Three days were allowed for submission of data i.e. June 19, 2020 - June 21, 2020. A sample of 1108 was collected and was not limited to 385 to strengthen the statistical power.

Data was entered into IBM® Statistical Package of Social Sciences (SPSS) ® version 23. Frequencies and percentages were calculated for categorical variables. 'Education level' variable was dichotomized for analysis. A Chi-square test was applied to find statistical significance. The *p*-value of ≤0.05 was taken as statistically significant.

Results

A sample size of 1108 was collected, 502/1108 (45.3%) participants were females, 606/1108 (54.7%) were males. 420/1108 (37.9%) participants were married and 688/1108 (62.1%) were unmarried. The education level of participants is shown in Table 2. 424/1108 (38.3%) of the participants didn't want to get screened for COVID-19 (Non-compliant population), while 684/1108 were willing (complaint population). Regarding the reason for denying COVID-19 screening, 130/424 (30.7%) chose *'fear of isolation/ quarantine with other COVID-19 patients, leading to worsening of disease'* and 114/424 (26.9%) chose *'Don't trust the reliability of the test'*, as summarized in Table 3. Out of the non-compliant population, 39.2% were females and 60.8% were males, this gender difference is statistically significant i.e. $p \leq 0.05$. 13.2% of the non-compliant population had education up to middle and 86.7% were educated more than middle; this difference is also statistically significant. Education level was dichotomized into 'up to middle' and 'more than middle' to apply the chi-square test. 36.6% of the non-compliant population were married and 63.6% were unmarried, this difference of marital status was not statistically significant (p= 0.392). Statistical significance between gender, marital status, education level, and willingness for COIVD-19 screening is summarized in Table 4.

Table 1: Questionnaire

Q 1. Gender (جنس)
1. *Female (عورت)*
2. *Male (مرد)*

Q 2. Marital status (ازدواجی حیثیت)
1. Married (شادی شدہ)
2. Unmarried (غیر شادی شدہ)

Q 3. Education (تعلیم)
1. Illiterate (ان پڑھ)
2. Middle (پنجم تک)
3. Matriculation (دہم تک)
4. Intermediate (بارہویں تک)
5. More than intermediate (بارہویں سے زیادہ)

Q 4. Would you get your test for COVID-19 done if provided free of cost?
اگر آپکو کویڈ-19 کا ٹیسٹ مفت فراہم کیا جائے، تو کیا آپ کروائیں گے؟)
1. Yes (ہاں)
2. No (نہیں)

Q 5. If NO, then why? (اگر ٹیسٹ نہیں کروانا، تو نہ کروانے کی وجہ؟)
1. If positive, fear of isolation/ quarantine with other COVID-19 patients, leading to worsening of the disease.
(اگر ٹیسٹ مثبت آیا تو،آیسولیشن یا دوسرے کویڈ-19 مریضوں کے ساتھ قرنطینہ کا خوف ، اُس وجہ سے میری بیماری بڑھ جائے گی۔)
2. If positive, Authorities will impose undue compulsory restrictions.
(اگر ٹیسٹ مثبت آیا تو، حکام غیر ضروری پابندیاں عائد کریں گے۔)
3. If positive, Damage to reputation in the community.
(اگر ٹیسٹ مثبت آیا تو، معاشرے میں ساکھ کو نقصان۔)
4. If positive, Anxiety, and stress in the PATIENT.
(اگر ٹیسٹ مثبت آیا تو، مریض میں پریشانی اور تناؤ۔)
5. If positive, Anxiety, and stress in FAMILY.
(اگر ٹیسٹ مثبت آیا تو، فیملی میں پریشانی اور تناؤ۔)
6. If positive, Loss of earning hand of family.
(اگر ٹیسٹ مثبت آیا تو، فیملی میں کمانے والا کوئی نہیں رہے گا۔)
7. If positive, who will look after the family in my absence!
(اگر ٹیسٹ مثبت آیا تو، فیملی کی دیکھ بھال کون کرے گا!)
8. Don't trust the reliability of the test.
(ٹیسٹ کی صلاحیت پر یقین نہیں رکھتا۔)

Table 2: Education Level

Education Level	Frequency	Percent (%)
Illiterate	42	3.8
Middle	64	5.8
Matriculation	448	40.4
Intermediate	32	2.9
More than intermediate	522	47.1
Total	**1108**	**100.0**

Table 3: Reason for Denying Covid-19 Testing

REASON FOR DENYING COVID-19 SCREENING/ NON-COMPLIANCE	*Frequency (N)*
1. If positive, fear of Isolation/ quarantine with other COVID-19 patients, leading to worsening of the disease.	130 (30.7%)
2. Don't trust the reliability of the test.	114 (26.9%)
3. If positive, Anxiety, and stress in FAMILY.	42 (9.9%)
4. If positive, Anxiety, and stress in the PATIENT.	42 (9.9%)
5. If positive, Authorities will impose undue compulsory restrictions.	34 (8%)
6. If positive, Damage to reputation in the community.	26 (6.1%)
7. If positive and isolated, who will look after the family in my absence!	20 (4.7%)
8. If positive and isolated, Loss of earning hand of family.	16 (3.8%)
Total	**424**

Table 4: Statistical Significance between Gender, Marital Status, Education Level and Willingness for Covid-19 Screening

Variable		*Total (N= 1108)*	*Willingness for COVID-19 screening*	
			Non-Compliant Population (N= 424)	Compliant Population (N= 684)
Gender	Female	502 (45.3%)	166 (39.2%)	336 (49.1%)
	Male	606 (54.7%)	258 (60.8%)	348 (50.8%)
	Statistical significance		*p= 0.001**	
Marital Status	Married	420 (37.9%)	154 (36.3%)	266 (38.8%)
	Unmarried	688 (62.1%)	270 (63.6%)	418 (61.1%)
	Statistical significance		*p=0.392*	
Education level **	Up to Middle	106 (9.6%)	56 (13.2%)	50 (7.3%)
	More than Middle	1002 (90.4%)	368 (86.7%)	634 (92.7%)
	Statistical significance		*p=0.001**	

Statistically significant.
****Education level had been dichotomized.***

Discussion

This study has shown that 424 (38.3%) of the sample population was non-compliant – didn't want to be screened for COVID-19. We were unable to find any local or international studies which quantified the non-complaint portion of the general public. Although this issue has been discussed thoroughly in the report by Steve Thompson.[22] The same issue has also been discussed in the report co-authored by Nobel laureate Paul Romer, where the need for introducing various incentives to motivate the asymptomatic population for screening, has been discussed.[23] 38.3% of the asymptomatic population being non-compliant, could pose a real problem in mass screening. This study highlights the fact that while planning for mass screening health policymakers need not only consider lack of resources but the non-compliant population as well.

When trying to find the reasons behind non-compliance it was found that 30.7% of the non-compliant population thought that if they tested positive, isolation and quarantine with other patients would further worsen their disease; which is not proven in any literature. 26.9% didn't trust the reliability of the test; while studies show that sensitivity of Reverse transcription-polymerase chain reaction (RT-PCR) for COVID-19 is 70%-90%. Although further independent validation and evidence for COIVD-19 testing are required to establish a 'gold-standard', currently available RT-PCR is reliable enough for screening purposes and is

being used globally.[24] 8% thought if tested positive, authorities are likely to impose undue restrictions; which implicates misinformation or lack of knowledge regarding quarantine and isolation. Preceding reasons (Reason no.1, 2, 5 in Table 3) used for denying COVID-19 screening, depict that there is a lack of knowledge and prevalence of false beliefs regarding COVID-19 among the general population. It has also been demonstrated by national and international studies.[25,26] This study shows that education level difference is statistically significant with a willingness to screen for COVID-19. It may be because of the reason that higher education level would decrease the misinformation and lack of knowledge, which could decrease the non-compliance. More surveys and interventional studies need to be conducted to establish this theory.

The current study has shown that anxiety has been an important determinant of compliance with screening. Of the non-compliant population, 9.9% have chosen anxiety among family members as the main reason while 9.9% has chosen anxiety in the patient itself. 6.1% showed concern that being labelled as COVID-19 patient could harm their reputation in the community, this may implicate that COVID-19 could emerge as a stigma in society. 4.7% showed concerns regarding family wellbeing if they are isolated after being tested positive. Similarly, 3.8% showed concerns regarding loss of earning hand of family, after isolation. Since in Pakistani culture males are mostly the sole bread earners of the family, it is only logical to deny screening to avoid isolation. This has been in accordance with a study done in Karachi by Balkhi F *et al*. Preceding reasons of non-compliance (Reason no. 3, 4, 6-8 in Table 3) highlight the negative mental health effects and socioeconomic effect of COVID-19 in our society. It has been a well-established aspect of COVID-19 that along with those who are infected, it also has an adverse effect on the mental health of those who aren't. It has been discussed in a local publication.[27] Regarding COVID-19, WHO states, "It is important that we look after our mental, as well as our physical, health." WHO has dedicated a webpage and various publications to address the issue of mental health during this pandemic.[28] This prevailing anxiety, lack of trust in COVID-19 testing, and false perceptions may point to COIVD-19 as a potential infodemic.[29]

This study has some limitations. This convenience sample is unlikely to represent the population of Pakistan. Illiterate and less educated people included in this survey belonged to cities, who have more access to electronic media and news; are unlikely to represent less educated people living in rural areas with little to no access to electronic media.

Conclusion

A major portion of the general population (38.3%) is unwilling for COVID-19 screening. Fear of isolation/ quarantine is the main reason for non-compliance.

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