International Journal of Reproductive Medicine & Gynecology

Research Article

Patient Attitudes towards Universal COVID-19 Screening: A Survey of Pregnant Women Undergoing Universal Screening at an East London Hospital -

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Submitted: 30 September 2020; **Approved:** 07 October 2020; **Published:** 10 October 2020

Cite this article: Shah N, Wasif S, Gupta R, Saeed F, Iliodromiti S, et al. Patient Attitudes towards Universal COVID-19 Screening: A Survey of Pregnant Women Undergoing Universal Screening at an East London Hospital. Int J Reprod Med Gynecol. 2020;6(1): 031-035.

ISSN: 2640-0944

ABSTRACT

Objective: To explore patients' attitudes and acceptability of universal screening for COVID-19 in a maternity population.

Design: Pre-screening and post-screening patient surveys

Setting: London

Population: Women admitted to the Maternity Unit at Newham Hospital during a two-week trial period of universal screening.

Methods: Cluster random sampling was used to select participants to complete the pre-screening questionnaire. Post-screening questionnaires were performed over the telephone.

Main outcome measured: Agreement to statements regarding patient's acceptability of the SARS-CoV-2 screening test and the impact screening had on the care provided to themselves and their babies.

Results: During the two-week period, 180 women underwent universal screening. 81 participants completed the pre-screening questionnaire and 79 participants completed the post-screening survey (72 - 85% completion rate). More than 70% of women agreed that routine screening resulted in a positive effect on their care, the care of their babies and on their families. More than 80% of women agreed that they would be happy with their care if all pregnant women were offered testing for COVID-19 on admission to hospital. However, 50.62% of women agreed that having a COVID-19 screening swab test taken was uncomfortable and 35.80% were worried about the test results. Nulliparous women were more likely to perceive the positive impacts of screening on their care, their babies care, and their families as compared to multiparous women.

Conclusion: Our study provides evidence that patient acceptability and tolerance to COVID-19 screening is high, which is key for future implementation of universal screening across maternity services in the UK.

INTRODUCTION

COVID-19 is caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV2) [1]. Since first being identified in December 2019 in China [2], it has spread globally, becoming recognised as a global pandemic on 11 March 2020 [3]. The first confirmed case in the United Kingdom (UK) was on 31st January 2019 [4], and since then there have been over 210,000 further cases with more than 31,000 deaths [5]. Social distancing and the widespread lockdown has reduced the reproducibility of the virus and controlled the exponential increase in the spread of the infection in the UK. Nevertheless, the virus is likely to remain in the community, and therefore, a viable and safe exit plan from the lockdown is required, without increasing the risk of a second peak.

National guidelines for COVID-19 screening rely on testing symptomatic individuals who display persistent cough or fever. Whilst most cases of COVID-19 are spread through symptomatic individuals, there is accumulating evidence that transmission can occur from pre-symptomatic individuals (SARS-CoV-2 detected before symptom onset) or asymptomatic (SARS-CoV-2 detected but symptoms never develop) [6]. Therefore, widespread testing for SARS-CoV2, to interrupt an otherwise undetected transmission chain and to fill critical knowledge gaps about the incidence of asymptomatic COVID-19 in the UK population is urgently required in order for the lockdown to end safely [7].

Pregnant women have been characterised as a vulnerable group for developing a severe infection [8], however, they cannot fully shield because of the multiple encounters with maternity services as part of their routine care. Therefore, the challenge of asymptomatic SARS-CoV-2 transmission can be associated with even greater implications in a pregnant population with the risk of transmission to their new-borns, other expectant mothers and Health Care Workers (HCW) rendering control of the pandemic more difficult.

Newham has had the highest age-standardised mortality rate for deaths involving COVID-19, with a rate of 144.3 deaths per 100,000 between 1st March 2020 and 17th April 2020 [9]. We therefore commenced a universal testing pilot for SARS-CoV-2 for two weeks at Newham University Hospital (NUH) in East London. In order to inform public health policymakers, we were interested in how universal testing was perceived by patients.

The aim of our study was therefore to explore patient's attitudes and acceptability of universal screening for COVID-19 in a maternity population.

METHODS

All patients who were admitted to the maternity unit between 22 April 2020 to 5 May 2020 were offered the SARS-CoV-2 nasopharyngeal swab test. Details of patients who had the swab taken were recorded in a secure electronic database to ensure follow-up. Results were made available within 12-24 hours, at which point patients were informed of their result. Patients were managed as if they were COVID-19 positive until negative swab results were available. This involved either managing patients in isolated side rooms, or in a designated "Admissions Ward" for patients whose swab results were pending. Patients whose test results were positive were isolated in a side room whilst in a hospital setting and given self-isolation advice on discharge.

The patient questionnaire was developed by a focus group of Obstetricians, after performing a literature review and evaluating previously published patient satisfactions [10-15]. In particular, the questionnaire was adapted from the validated HIV universal screening toolkit. The first half of the questionnaire included questions on patient demographics [15]. The second half explored attitude towards COVID-19 and screening where responses were rated on a five-point Likert scale from "strongly disagree" to "strongly agree".

Cluster random sampling was used to select participants to complete the anonymous pre-screening questionnaire, with all eligible patients' beings offered the opportunity to complete the survey at set points during the screening period. This was performed before the patient was informed of their SARS-CoV-2 test results. A post-result survey was performed over the telephone with the same questions asked to re-assess attitudes towards SARS-CoV-2

Table 1: Characteristics of patients who completed surveys *$p < 0.05$.

	Pre-screening questionnaire (n = 81)	Post-screening questionnaire (n = 79)	p value
Parity, % (n)			
Nulliparous	46.27% (37)	41.77% (33)	$p = 0.570$
Multiparous	53.75% (43)	58.23% (46)	
Occupation, % (n)			
Employed	48.15% (39)	44.30% (35)	$p = 0.885$
Unemployed	44.44% (36)	48.10% (38)	
Student	7.41% (6)	7.59% (6)	
Highest education level, % (n)			
Did not complete high school	5% (4)	3.85% (3)	$p = 0.946$
High school graduate, GED or equivalent	21.25% (17)	19.23% (15)	
Some college	20% (16)	23.08% (18)	
College degree or higher	53.75% (43)	53.85% (42)	
Ethnicity, % (n)			
White	32.10% (26)	29.11% (23)	
Asian/Asian British	54.32% (44)	58.23% (46)	
Black / African / Caribbean / Black British	7.41% (6)	6.33% (5)	$p = 0.961$
Mixed/Multiple ethnic groups	1.23% (1)	0% (0)	
Other ethnic groups	3.94% (4)	6.33% (5)	
English speaker, % (n)			
Yes	92.59% (75)	92.41% (73)	$p = 0.964$
No	7.41% (6	7.59% (6)	
Total home occupancy, % (n)			
1-4	65.33% (49)	74.03% (57)	$p = 0.000^*$
5-8	30.67% (23)	24.68% (19)	
9-12	2.67% (2)	1.30% (1)	
13 or more	1.33% (1)	0% (0)	
COVID-19 screening results, % (n)			Not applicable
Positive	Not applicable	5.06% (4)	
Negative	Not applicable	94.94% (75)	

and screening. Follow-up began seven days after the result became available. If contact was not possible, reattempts were made up until day ten. At the time of data analysis, the first 110 women to have undergone universal screening were within the allocated time frame to assess post-screening attitudes and therefore were included in the study. This timeframe was chosen to allow sufficient time for screened women to have returned to their normal daily routine and make the necessary adjustments in their households. All completed questionnaires were collected by maternity staff and entered onto an electronic database without any patient identifiers to ensure anonymity.

As this was an anonymous service evaluation, ethics approval was not required. The study was registered under the local clinical effectiveness team and underwent review by the COVID-19 Committee.

STATISTICAL ANALYSIS

All statistical analyses were performed using the IBM SPSS version 26. Differences in characteristics of the patients between the two groups, that is, the pre-screening and post-screening cohorts were compared using the independent sample t-test for the continuous variables and the Chi^2 test for the categorical variables. Multivariate Analysis of Covariances (MANCOVA) was used to determine if there was an association between any of the demographics and the perceived ratings of the opinion statements.

RESULTS

During the two-week period, 180 women underwent universal screening. Random sampling in the week following the introduction of universal screening selected 95 women, of which 81 completed the pre-screening questionnaire (85.26% completion rate). Of the 110 women eligible for the post-screening telephone survey, 79 participants completed the survey (71.82% completion rate). Reasons for non-completion of the pre-screening survey included active labour deterring completion of the survey, with the language barrier being a reason for non-completion of the post-screening survey.

Table 2: Comparison of answers to pre-screening and post-screening questions *$p < 0.05$.

	Strongly agree/agree		
	Pre-screening questionnaire (n = 81), % (n)	Post-screening questionnaire (n = 79), % (n)	p value
I would be happy with my care in hospital if all pregnant women were offered testing for COVID-19 on admission to hospital	82.72% (67)	94.94% (75)	$p = 0.028^*$
Maternity staff were able to answer my questions satisfactorily	81.48% (66)	83.54% (66)	$p = 0.279$
My healthcare providers are uncomfortable caring for patients with COVID-19	23.46% (19)	15.19% (12)	$p = 0.049^*$
Having the COVID-19 test will have a positive effect on care provided to me and my baby	93.83% (76)	74.68% (59)	$p = 0.000^*$
Having the COVID-19 test will have a positive effect on my family	88.89% (72)	69.62% (55)	$p = 0.006^*$

Patient demographics for both the pre-screening and post-screening cohorts are presented in table 1. There was no statistical difference between the groups in terms of parity, occupation, highest education level, ethnicity, and ability to speak English. Nevertheless, there was a statistically significant difference between home occupancy between the pre-screening cohort (mean = 3.21, SD = 2.338) and the post-screening cohort (mean = 4.86, SD = 2.453), $p = <0.05$.

On the pre-screening questionnaire, 82.72% of participants agreed or strongly agreed that they would be happy if the maternity unit offered screening for all pregnant women for COVID-19 on admission to hospital, with 12.35% disagreeing or strongly disagreeing. 93.83% of participants agreed or strongly agreed that having the COVID-19 test would have a positive effect on the care

provided to both themselves and their babies, with 1.23% disagreeing or strongly disagreeing. 88.89% of participants agreed or strongly agreed that the test would have a positive effect on their families, with 3.70% disagreeing or strongly disagreeing. The remaining participants neither agreed nor disagreed with the above statements.

The post-screening questionnaire showed that 94.94% of participants agreed that they would be happy if their maternity unit offered screening to all pregnant women for COVID-19 on admission to hospital. Although 74.68 % of respondents strongly agreed or agreed that having the COVID-19 test had a positive effect on the care provided to both themselves and their babies, 11.39% disagreed or strongly disagreed. Similarly, 69.62% of the participants either strongly agreed or agreed that the test had a positive effect on their families with 10.13% disagreeing or strongly disagreeing. Post-screening, there was a significant shift towards women agreeing with the statement that they would be happy if their maternity units offered screening for COVID-19 to all pregnant women on admission to hospital.

Nulliparous women were significantly more likely to agree that screening for COVID-19 would have or had a positive effect on their own and their babies care as compared to multiparous women ($p < 0.011$). Nulliparous women were also more likely to agree that screening would have or had a positive effect on their families ($p < 0.045$). There were no other significant associations between demographical factors and answers to statements. Table 2 compares the responses in statements between the pre-screening and post-screening groups.

DISCUSSION

Our results suggest that despite the discomfort from having a swab taken, screening of the inpatient maternity population is acceptable to women with generally positive effects on themselves, their babies, and their families. Nulliparous women are more likely to perceive the positive impacts of screening on their care, their babies care, and the impact on their families as compared to multiparous women.

This patient survey also highlighted that there is a high ethnic diversity, a high number of occupants per house and a low employment rate amongst our pregnant women, which is consistent with the general population of Newham borough [16]. These factors, in addition to the high population density in the area are likely to be contributing factors to Newham the highest age-standardised COVID-19 related mortality rate in the UK [17].

Universal screening provides the opportunity to use COVID-19 status to appropriately assign beds and Personal Protective Equipment (PPE), thereby minimising spread amongst both healthcare staff, patients, and visitors. This is particularly important in highly populated areas such as Newham, as overcrowding is a major factor in the transmission of diseases with epidemic potential [18].

There are minimal and diverse data regarding the population prevalence of asymptomatic pregnant women. Sutton, et al. [19] in a study carried out in New York, identified that 13.7% of asymptomatic pregnant women tested positive for COVID-19, with Vintzileos, et al. [20] reporting a similar value of 13%. However, Tassis, et al. [21], in a study carried out in Italy, identified that only 0.8% of asymptomatic pregnant women tested positive for COVID-19. These discrepancies arise from the different prevalence' of COVID-19 depending on the country of study and the point on the pandemic curve that the study was performed. Since prevalence cannot be extrapolated from other populations, it is vital that we continue to perform repeated testing in asymptomatic COVID-19 individuals, in order to effectively guide public health measures aimed at limiting the reproducibility of the virus and the spread of the infection. We showed that such a policy would be well accepted by consumers', which is key in the implementation of new policies.

Strengths of this study include the timely manner with which it was conducted, during a time-critical period during the ongoing COVID-19 pandemic. Newham Hospital is one of the first maternity hospitals in the UK to initiate a screening programme for COVID-19 within its maternity department. Demographics of the population surveyed were similar to the demographic diversity of the local population.

Limitations of this study include the response rate, which may lead to a non-response bias. However, the similarity in demographics between the pre-screening and post-screening cohorts may be evidence against a major response bias. The post-screening survey was performed by telephone consultation, therefore may be more prone to response bias. Finally, the survey design aimed to explore patient's attitudes and acceptability of universal screening and was therefore not a validated questionnaire.

CONCLUSION

Our study provides evidence that patient acceptability and tolerance to COVID-19 screening at Newham Hospital is high, which is key for future implementation of universal screening across the maternity services in the UK. Universal testing and targeted social distancing have been suggested by many academics as an imperative measure to control the pandemic when the lockdown ends.

ACKNOWLEDGEMENT

Natasha Liou and Molykuty Dumpakal were also involved in completing post-screening surveys.

Contribution to Authorship

RG, SW, FS and LV designed the questionnaires. Cluster random sampling of pre-screening questionnaires was performed by SW, FS and LV. Post-screening surveys were completed by SW, FS and LV. Results from questionnaires were collected and input into a database by SW, FS and LV. NS performed the data analysis and wrote the manuscript. The manuscript was edited by SI, FS and LV.

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