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Research Article

Does the Fear of Needles Influence Jamaicans' Willingness to be Vaccinated against COVID-19?

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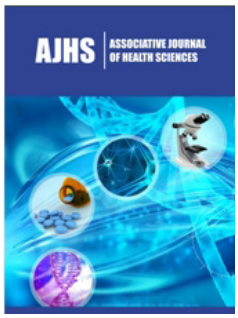

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Abstract

Introduction: As of November 21, 2021, the vaccination rate in the world is 55% (fully vaccinated, 43%) compared to 22% in Jamaica (17% fully vaccinated), 70% in the United States and Canada, 66% in Latin America, Asia-Pacific (64%), Europe (62%), Middle East (45%), and 9.7% in Africa. A variable proportion of each country's population is delaying or avoiding vaccination, which may hamper the success of vaccination programmes. The frequency of needle injections averaged from 2-11 per person each year in 10 major regions globally in a study conducted by the World Health Organization [1-10].

Aim: To explore whether the fear of needles influences Jamaicans' willingness to be vaccinated?"

Methods and materials: The study used an explanatory web-based cross-sectional design. A standardized questionnaire instrument consisting of fifteen closed-ended questions was disseminated via WhatsApp, Facebook, and face-to-face interaction in the fourteen parishes. The Statistical Packages for the Social Sciences (SPSS) 25 for Windows 27.0 provided data analysis (Table 1).

Table 1: Demographic characteristics of the sampled respondents, n=1,080.

Details	% (n)
Gender:	
Female	57.7 (623)
Male	42.3 (457)
Age Cohort:	
18-27	40.9 (442)
28-37	20.6 (223)
38-47	19.4 (209)
48-57	13.5 (146)
58 and over	5.6 (60)
Area of Residence (i.e., Parishes):	
Kingston and St Andrew	17.4 (188)
St Thomas	2.4 (26)

Portland	2.7 (29)
St Mary	3.2 (35)
St Ann	3.1 (33)
Trelawny	1.9 (20)
St James	2.9 (31)
Hanover	2.9 (31)
Westmoreland	1.7 (18)
St Elizabeth	19.7 (213)
Manchester	12.2 (132)
Clarendon	20.0 (216)
St Catherine	10.0 (108)
	17.4 (188)

Findings: Most of the respondents were females living in Clarendon who were hesitant to take the vaccine due to trypanophobia. Of the total respondents, 62.6% (n=676) avoided medication requiring administration through needles. The majority of the respondents (31.2%, n=337) was three on a scale of 1-5 (with 5 being the highest level of fear). Most respondents (43.6%, n=471) answered "Yes" when asked, "If the needles were shorter would you take the vaccine?" When asked if the following statement referred to the: "My heart races when I think about getting an injection", most of the respondents (31.9%, n=344) agreed. Age, fear of needles, and willingness to accept oral vaccination accounted for 21.6% (i.e., Nagelkerke R2) of the variance in vaccination status (-2Ll=744.023; Omnibus test of Model coefficients: $\chi2(8)=117.109$, $P < 0.001$; Hosmer and Lemeshow test: $\chi2(8)=10.750$, P-value = 0.216) [11-13].

Conclusion: The influence of trypanophobia on COVID-19 vaccination rates in Jamaica must be considered when formulating future public media strategies, policymakers' approach, and civic responsibility in reducing vaccine hesitancy among the population. Therapeutic healthcare provider and patient interactions are pivotal in increasing the patient's confidence, willingness toward treatment, and the strength to overcome trypanophobia (Table 2).

Table 2: Respondent's views on needles/injections, n=1,080.

Details	% (n)
Like taking medication in the form of injection	
Yes	37.4 (404)
No	62.6 (676)
Perspectives on needles	
They are okay I don't have a problem with them	37.2 (402)
I'm a bit scared of them	32.3 (349)
They make me feel nervous	22.0 (238)
They are too big	8.4 (91)
Degree on fearful of needles (scale of 1-5, with 5 being the highest level of fear)	
1 – the least	17.6 (190)
2	15.8 (171)
3 - moderate	31.2 (337)
4	20.5 (221)
5 – the most	14.9 (161)
If the needles were shorter would you take the vaccine?(Vaccines in general)	
Yes	43.6 (471)
No	36.2 (391)
Not Applicable	20.2 (218)
If the vaccine was an oral substance, would you take it?	
Yes	60.8 (657)
No	39.2 (423)

Does this statement refer to you; 'My heart races whenever I think about getting an injection'	
Strongly disagree	31.9 (344)
Disagree	20.1 (217)
Neutral	22.2 (240)
Agree	15.1 (163)
Strongly Agree	10.7 (116)
Have you ever avoided medical treatment because you knew needles would be involved?	
Yes	40.0 (432)
Maybe	12.0 (130)
No	48.0 (518)
Do you believe you will overcome your fear of needles and take the vaccine?(Vaccines in general)	
Yes, I believe	34.9 (375)
I don't fear needles	27.9 (300)
I believe a little bit	21.6 (232)
No, I don't believe	15.5 (167)

Keywords: COVID-19; Fear of needles; Injection; Needle; Needle phobia; Trypanophobia; Vaccine acceptance; Vaccine hesitancy

Introduction

The initial report of the Coronavirus 2019 (COVID-19) by the World Health Organization (WHO) occurred on December 31, 2019, following pneumonia cases of unknown origins in Wuhan city, China (World Health Organization (WHO). The virus was declared a global health emergency on January 30, 2020 (WHO). Holder of the New York Times indicated that as of November 21, 2021, the vaccination rate in the world is 55% (fully vaccinated, 43%) compared to 22% in Jamaica (17% fully vaccinated), 70% in the United States and Canada, 66% in Latin America, Asia-Pacific (64%), Europe (62%), Middle East (45%), and 9.7% in Africa. These statistics indicate that a variable proportion of the population in each country are delaying or avoiding vaccination, which may hamper the success of vaccination programmes [13-21].

A significant number of persons continue to be diagnosed with the COVID-19 virus. A more substantial number of individuals died from the COVID-19 due to the initial lack of knowledge of how to treat such a virus, making vaccines more critical. The fear of getting vaccinated may be hindering the current uptake in Jamaica [21-26]. A renowned medical doctor, Professor Denise Eldemire Shearer, postulated that trypanophobia (i.e., the fear of needles or needle phobia) is accounting for some per cent of COVID-19 vaccine hesitancy among the Jamaican population, which is also the case across the globe, and this extends to children (Table 3). A search of the literature revealed no empirical support for the perspective of Eldemire, and this means that the society continue to operate and plan in ignorance for the pandemic. Hence, this study seeks to answer the following research questions:

A. What are the reasons for Jamaicans current unvaccinated status?

B. Is the vaccination process delayed due to the fear of needles? and

C. What is the profile of those who fear needles in the vaccination process?

Table 3: Issues on COVID-19 Vaccines, n=1,080.

Details	% (n)
Have you considered taking the COVID-19 vaccines?	
Yes	69.4 (750)
No	30.6 (330)
Who would you rather to administer the vaccine to you?	
Nurse	47.6 (341)
Doctor	52.4 (375)

H_0: No statistical relationship exists between the fear of needles and considering taking the COVID-19 vaccine.

To contextualize the current study and answer the research question, a theoretical framework (i.e., Theory of Reasoned Action and the Theory of Planned Behavior) was developed to guide and better understand COVID-19 hesitancy as a result of trypanophobia in Jamaica [26-39].

Theoretical framework

Globally, varying views exist on the vaccination process and the COVID-19 virus, leading to world leaders implementing additional measures. Social distancing, frequent hand washing, and education were some of those measures (Table 4). Despite the plethora of current information, individuals still have mixed feelings about vaccination. These feelings range from fear of needles to misunderstanding of information. A theoretical framework that addresses the study constructs is warranted to explore further the "fear needles" and their influence on vaccinations. This current study uses a theoretical framework reflecting the Theory of Reasoned Action and the Theory of Planned Behavior that aided the researchers in better assessing these phenomena (Figure 1).

Table 4: A cross-tabulation between the fear of needles and considering taking the COVID-19 Vaccine, n=1,080.

Details	Rating the Fear of Needles (On a Scale of 1-5, with 5 Being the Highest Level of Fear)					
	1	2	3	4	5	Total
Considered taking vaccines	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)
Yes	84.7 (161)	68.4 (117)	65.3 (220)	76.0 (168)	52.2 (84)	69.4 (750)
No	15.3 (29)	31.6 (54)	34.7 (117)	24.0 (53)	47.8 (77)	30.6 (330)
Total	190	171	337	221	161	1,080

H_0: There is no statistical association between considering being vaccinated against COVID-19 and preferring oral vaccines.

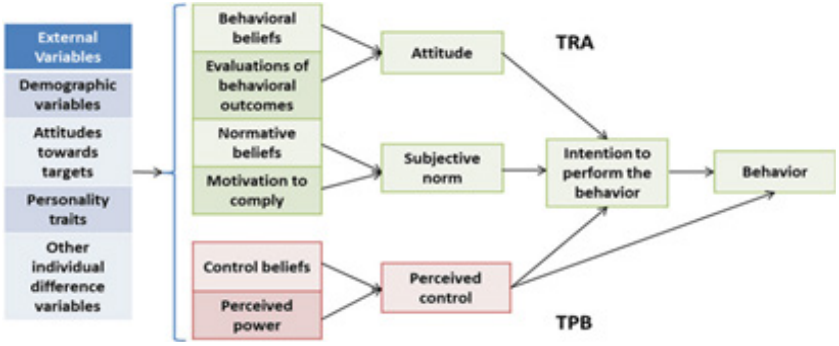

Figure 1: Reason action theory/theory of planned behaviour.

According to Rural Health Information Hub (2018), the Theory of Reasoned Action and the Theory of Planned Behavior explain the association of beliefs and behaviour and implies that a person's health behaviour is determined by their intention to perform a behaviour. Attitude, subjective norms, and perceived behavioural control collectively influences an individual's behavioural intentions. An individual's attitude toward the behaviour and the subjective norms affects their intention to perform a behaviour. However, subjective norms result from the social and environmental surroundings and an individual's perceived control over the behaviour (Table 5). Generally, a positive attitude and positive subjective norms result in greater perceived control and increase the likelihood of intentions governing changes in behaviour. The theory clarifies health behaviours, planning, implementing health promotion and disease prevention programs [39-44].

Table 5: A cross-tabulation of considering being vaccinated against COVID-19 and prefer oral Vaccines, n=1,080.

Details	Prefer Oral Vaccine		Total
	No	Yes	
Considering Being vaccinated against COVID-19:	% (n)	% (n)	% (n)
No	50.4 (213)	17.8 (117)	30.6 (330)
Yes	49.6 (210)	82.2 (540)	69.4 (750)
Total	423	657	1,080

Furthermore, subjective norms describe the behaviours of healthcare providers, patients, care providers, and others in the community. Therefore, these theories provide a framework for answering this current study's research question, "Does the fear of needles influences Jamaican's willingness to be vaccinated?" An individual's decision depends on their attitude towards a particular situation, whether positive, negative, or neutral Tables 6-8. Using the theoretical framework (Figure 1) to address the research question, we anticipate that individuals will consider the vaccination process negative or positive. Furthermore, if individuals believe that the outcome of taking the vaccine is beneficial, they will have a positive attitude. If they believe the vaccine is not essential and has undesirable effects, they will react negatively.

Table 6: A Cross-tabulation between the fear of needles and Gender, n=1,080.

Details	Prefer Oral Vaccine		Total
	Rating the Fear of Needles	Gender	
	Female	Male	
	% (n)	% (n)	% (n)
1-the least	16.2 (101)	19.5 (89)	17.6 (190)
2	15.4 (96)	16.4 (75)	15.8 (171)
3	31.1 (194)	31.3 (143)	31.2 (337)
4	21.0 (131)	19.7 (90)	20.5 (221)
5-the most	16.2 (101)	13.1 (60)	14.9 (161)
Total	623	457	1,080

H_0: Older respondents are less likely to fear needles than younger respondents.

Table 7: A cross-tabulation of rating the fear of needles and age Cohort, n=1,080.

Details	Age Cohort (in years)					
	18-27	28-37	38-47	48-57	58+	Total
Rating the fear of needles	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)
1-the least	25.3 (112)	13.0 (29)	12.0 (25)	11.6 (17)	11.7 (7)	17.6 (190)
2	18.1 (80)	14.8 (33)	17.7 (37)	11.6 (17)	6.7 (4)	15.8 (171)
3	24.2 (107)	35.4 (79)	36.8 (77)	36.3 (53)	35.0 (21)	31.2 (337)
4	17.6 (78)	22.4 (50)	20.6 (43)	22.6 (33)	28.3 (17)	20.5 (221)
5-the most	14.7 (65)	14.3 (32)	12.9 (27)	17.8 (26)	18.3 (11)	14.9 (161)
Total	442	223	209	146	60	1,080

Table 8: Binary logistic regression of vaccination status of Jamaica by selected explanatory Variables.

Explanatory variable	B	S.E.	Wald	P-value	OR	95% C.I. Lower - Upper
Prefer Oral Vaccines (1=Yes)	1.677	0.187	80.315	<0.001	5.347	3.706 - 7.715
Nurse Administer (1=Yes)	0.193	0.186	1.083	0.298	1.213	0.843 - 1.747
Female	0.119	0.186	0.412	0.521	1.126	0.783 - 1.621
Rating the fear of needles	-0.349	0.078	20.1	<0.001	0.705	0.605 - 0.821
Age2 (28-37 years)	-0.224	0.256	0.769	0.381	0.799	0.484 - 1.319
Age3 (38-47 years)	-0.737	0.247	8.905	0.003	0.479	0.295 - 0.777
Age4 (48-57 years)	-0.22	0.288	0.584	0.445	0.803	0.457 - 1.411
Age5 (58+ years)	-0.62	0.389	2.534	0.111	0.538	0.251 - 1.154
Reference group (18-27 years)	1					
Constant	1.198	0.318	14.164	<0.001	3.312	

OR denotes the odds ratio.

References

1. Ajzen I (1991) The theory of planned behavior. Organizational Behavior and Human Decision Processes 50(2): 179-211.
2. Andrews N, Tessier E, Stowe J, Gower C, Kirsebom F, et al. (2022) Duration of protection against mild and severe disease by Covid-19 vaccines. New England Journal of Medicine 386(4): 340-350.
3. Appleby J (2021) Fear of needles may keep many people away from Covid vaccines: Images of large Covid-19 needles hands are on billboards, bus stop posters and all-over social media.
4. Baccolini V, Renzi E, Isonne C, Migliara G, Massimi A, et al. (2021) COVID-19 vaccine hesitancy among Italian university students: A cross-sectional survey during the first months of the vaccination campaign. Vaccines 9(11): 1292.
5. Brown L, Gopal L (2021) Covid vaccine and needle phobia: It feels like the world is ending.
6. Carey CL, Harris LM (2005) The origins of blood-injection fear/ phobia in cancer patients undergoing intravenous chemotherapy. Behavior Change 22(4): 212-219.
7. Carmin C (2019). How to overcome your fear of needles.
8. Cavaleri M, Enzmann H, Straus S, Cooke E (2021) The European medicines agency's EU conditional marketing authorisations for COVID-19 vaccines. The Lancet 397(10272): 355-357.
9. Cemeroglu A, Can A, Davis A, Cemeroglu O, Kleis L, et al. (2015) Fear of needles in children with type 1 diabetes mellitus on multiple daily injections and continuous subcutaneous insulin infusion. Endocrine Practice 21(1): 46-53.
10. Centers for Disease Control and Prevention (CDC) (2022) Needle fear and phobia-Find ways to manage. CDC, U.S. Department of Health & Human Services.
11. Davis LA, Ku BS, Griffin B, Fields JM (2013) Prevalence of needle phobia in patients with difficult venous access. Academic Emergency Medicine 20(5): S141.
12. DeNicola E, Aburizaize O, Siddique A, Khwaja H, Carpenter DO (2016) Road traffic injury as a major public health issue in the kingdom of saudi arabia: A review. Frontiers in Public Health 30(4): 215
13. Fishbein M, Ajzen I (1975) Belief, attitude, intention and behavior: An introduction to theory and research. Reading, MA: Addison Wesley, USA.
14. Fishbein M, Ajzen I (2010) Predicting and changing behavior: The reasoned action approach. Taylor & Francis, New York, USA, pp. 538.
15. Freeman D, Lambe S, Yu LM, Freeman J, Chadwick A, et al. (2021). Injection fears and COVID-19 vaccine hesitancy. Psychological medicine 1-11.
16. Fritscher L (2021) What is trypanophobia?
17. Hackman CL, Knowlden AP (2014) Theory of reasoned action and theory of planned behavior-based dietary interventions in adolescents and young adults: a systematic review. Adolescent Health, Medicine and Therapeutics 5: 101-114.
18. Hamilton JG (1995) Needle phobia: a neglected diagnosis. Journal of Family Practice 41(2):169-75.
19. Holder J (2021) Tracking coronavirus vaccinations around the world. New York Times, New York.
20. Hutin YJ, Chen RT (1999) Injection safety: a global challenge. Bulletin of the World Health Organization 77 (10): 787-788.
21. Jamaica Observer (2021) Easing vaccine hesitancy requires everyone's help. Kingston: Jamaica Observer, California, USA.
22. Legg T (2018) Trypanophobia.
23. Loopnews (2017) Needle phobia*:* Can you overcome a fear of jabs?
24. Love A, Love R (2021) Considering Needle Phobia among Adult Patients During Mass COVID-19 Vaccinations. J Prim Care Community Health 12:21501327211007393.
25. Lyons R (2021) Fear of needles causing vaccine hesitancy, says Eldemire-Shearer. Kingston: Jamaica Observer, California, USA.
26. MacDonald NE, SAGE Working Group on Vaccine Hesitancy (2015) Vaccine hesitancy: Definition, scope and determinants. Vaccine *33*(34): 4161-4164.
27. Malcolm X (2016) Trypanophobia- A fear of needles.
28. McLenon J, Rogers MAM (2019) The fear of needles: A systematic review and meta-analysis. Journal of Advanced Nursing, 75(1):30-42.
29. McMurty M (2021) Needle fears can cause COVID-19 vaccine hesitancy, but these strategies can manage pain and fear.
30. Montaño DE, Kasprzyk D (2008) Theory of reasoned action, theory of planned behavior, and the integrated behavioral model. In Glanz K, et al. (Eds.), Health behavior and health education: Theory, research, and practice, Jossey-Bass, USA, pp. 67-96.
31. National Library of Medicine. (2021) How to cope with medical test anxiety.
32. Ratini M (2021) What to Know About the Fear of Needles (Trypanophobia).
33. Ritchie H, Mathieu E, Rodés-Guirao L, Appel C, Giattino C, et al. (2021) Coronavirus Pandemic (COVID-19).
34. Rural Health Information Hub (2018) Theory of reasoned action/ planned behavior.
35. Sierzega J (2021) Conquering needle phobia for the COVID-19 vaccine.
36. Smith G (2021) Needle phobias are preventing some people from getting COVID-19 vaccines. These interventions could help. U.S. Department of Health & Human Services.
37. Sørensen K, Skirbekk H, Kvarstein G, Wøien H (2020) Children's fear of needle injections: a qualitative study of training sessions for children with rheumatic diseases before home administration. Pediatric Rheumatology 18(1):13.
38. Starr M, Poole C (2016) Utilising shared care documents to promote self-care for a patient with trypanophobia. Fresenius Medical Care.
39. Statistical Institute of Jamaica (STATIN) (2022) Population statistics. Kingston, STATIN, California, USA.
40. U.S. Department of Health & Human Services (2022) Children's Mental Health: Needles fear and phobia - Find way to manage.
41. World Health Organization (WHO) (2020) Novel Coronavirus (2019-nCoV) SITUATION REPORT.
42. World Health Organization (WHO) (2020) WHO Director-General's opening remarks at the media briefing on COVID-19.
43. World Health Organization (WHO) (2020) COVID-19 Public Health Emergency of International Concern (PHEIC) Global research and innovation forum: Towards a research roadmap.
44. World Health Organization (WHO) (nd) Coronavirus disease (COVID-19) pandemic.