



**WILLINGNESS OF PATIENTS TO USE THE X-RAY CHANGING GOWN AT THREE  
TERTIARY HOSPITALS IN MAIDUGURI METROPOLIS DURING COVID - 19  
PANDEMIC**

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**ABSTRACT**

**Background** The x-ray changing gown is a long loose piece of clothing designed to protect the dignity of the Patient during radiological examination. However, the outbreak of COVID-19 pandemic has affected the psychology of the patient on the use of the x-ray changing gown.

**Objective** To assess the willingness of the patients towards the use of the x-ray changing gown during radiological examination and to identify factors responsible for the unwillingness of some of the patients to use the gown.

**Materials and methods:** A self-administered semi-structured questionnaire was design and distributed containing three sections. Section A, the demography of the respondents, section B, enquiries on the willingness of the respondents to wear the x-ray changing gown, and section C, enquiries on the factors that hinders the respondents to wear the x-ray changing gown. A total of 300 questionnaires were distributed using convenience sampling technique. The data collected were analyzed descriptively using frequency and percentage.

**Results** All the questionnaires were returned (100%). Out of the 300 respondents, 27.3% (n=82) attended higher education while 72.7% (n=218) attended either secondary education (20%, n = 60) or primary school and below (25%, n=75) or did not attend any level of education (27.7%, n=83). The result of the study shows that 32.0 % (n = 96) of the respondents were comfortably willing to use the x-ray changing gown while 31.0 % (n = 93) were not. The major factors responsible for patient unwillingness to wear the gown was that the changing gown was not fitting to their body statue and gender (33.3 %, n = 100), and unsuitable for wearing (37.7%, n =113). Lack of good hygiene (31.0%, n=93) and cultural or religious beliefs (34.7%, n=104).

**Conclusion:** More than half of the patients were unwilling to wear the x-ray gown and lack of fitted gowns for body size and gender, lack of good hygiene and cultural or religious beliefs were responsible for this unwillingness.

## Introduction

The x-ray changing gown is a common attire for several radiological procedures designed to protect the dignity of the patient [1,2]. Every accessory in the radiology department including patient gown appears contaminated in the eyes of the uninformed patient [2,3,4]. The patient's perception of these accessories if not well guided by adequate communication may affect their confidence on the safety of the examination [2,19,20]. Beyond the evident protective element of clothing, it operates as a cultural communicator in everyday life by expressing social status, gender, occupation, religion, personality, and individuality contributing to the construction of social identity [6,7,15,16]. The x-ray changing gown however, can induce psychological distress, induce feelings of disempowerment, and lowered self-esteem [6,5,17,18] to the patient. If every accessory in the radiology department appears to be contaminated in the eyes of the patient, what could be the perception of the patient on the x-ray changing gown during the corona virus infection known as Covid-19 pandemic that engulfed the whole world? In an ideal setting, the x-ray changing gown undergoes series of sterilization process before reuse, but the uninformed patient may not be aware that [3,8,9,10,11]. Unfortunately, the impact of wearing the x-ray changing gown has received little or no attention in contemporary psychological research, despite studies reporting that getting dressed is a form of self-expression [10,11,12,13,14]. Therefore, with patient centered care in mind, this study is focused on the willingness of the patient towards the use of the x-ray changing gown during radiological examination and to identify any factor responsible for the unwillingness of some of the patients to use the gown.

## Materials and Methods

A cross-sectional study was conducted where a self-administered semi-structured questionnaire was design and distributed. The questionnaire contained three sections: section A, the demography of the respondents, section B, enquiries on the willingness of the respondents to wear the x-ray changing gown, section C, enquiries on the factors that hinders the respondents to wear the x-ray changing gown. A total of 300 questionnaires were administered to the respondents and the 300 questionnaires were returned, making the return rate of the study 100%. The data collected were analyzed descriptively on frequency and percentage using SPSS version 20.0 and ethical clearance was obtained for the study.

## Results

Table 1 shows the sociodemographic of the respondents. More than half of the respondents (53%) were female. The highest age range is between the ages of 41 – 59 %. Out of the 300 respondents, 27% (n=82) attended higher education, 73% (n=218) attended either secondary education (20%, n = 60) or primary school (25%, n=75) while 28% (n=83) of the respondents did not attend any level of education.

Table 2 shows patient willingness to wear the gown. 32 % (n = 110) of the respondents were willing and comfortable using the gown while 31% are not.

Table 3 shows factors that influences patients' unwillingness to the gown. The material of the x-ray changing gown affected the attitudes of 29.7 % (n = 89) towards wearing it but did not affect the attitude of 34.3 % (n = 103) while 36.0 % (n = 108) were indifferent. The x-ray changing gown was not fitting to the body statue and gender for 33.3 % (n = 100) of the respondents while 33.7 % (101) remain indifferent in their response. The study also shows that the design of the gown is not suitable for wearing for 37.7 % (n = 113) of the respondents and 31.3 % (n = 94) were indifferent in their

response. 31.0 % (n = 93) of the respondents says the x-ray changing gown they used was not in good hygiene state while 37.0 % (n = 111) responded indifferently. The study shows that the x-ray changing gown is not in adherence to the cultural or religious beliefs of 34.7 % (n = 104) of the respondents while 33.3 % (n = 100) were indifferent.

**Table 1: Socio-demographic Characteristics of the Respondent**

Socio-demographic Characteristics	Frequency	Percentage
<b>Gender</b>		
Male	141	47.0
Female	159	53.0
<b>Age</b>		
18-40	84	28.0
41-59	110	36.7
>59	106	35.3
<b>Marital Status</b>		
Single	109	36.3
Married	107	35.7
Divorced	84	28.0
<b>Level of Education</b>		
Primary School and below	75	25.0
Secondary Education	60	20.0
Higher education	82	27.3
None	83	27.7

**Table 2: Willingness of Respondent to Use the X-ray Gown**

	Frequency	Percentage
<b>Were you comfortable with the X-ray changing gown given to you?</b>		
Yes	96	32.0
No	93	31.0
I don't know	111	37.0

**Table 3: Factors influencing Unwillingness to Use X-ray Changing gown**

	Yes	No	I don't know
Was the material for the X-ray changing gown comfortable for you?	80 (27%)	112 (37%)	108 (36%)
Is the gown fitting to your body statue and gender?	99 (33%)	100 (33%)	101 (34%)
Is the design of the gown suitable for wearing?	93 (31%)	113 (38%)	94 (31%)
Was the gown in good hygiene state	96 (32%)	93 (31%)	111 (37%)
Is the gown in adherence to your cultural or religious beliefs	96 (32%)	104 (35%)	100 (33%)

## Discussion

The findings of this research reveals that 36.7% (110) were willing to wear the gown, 30.7% (92) were not willing to wear the gown and 32.7% (98) were neutral. The design, appearance of the gown as well as its hygiene state have a significant role in patients attitude the gown. This agrees with the results obtained by [11] which showed that more than half of the patients were unwilling to use the hospital gown. It also showed that hygiene was one of the primary factors for patients' negative response toward the x-ray changing gown. Some of the respondents 98% were discouraged because they were not aware of the reasons for wearing the gown thinking it had no direct relationship with their examination. Also, 2% of the respondents felt the way the gown was introduced to them was impolite, discouraging and insensitive. The issue of cleanness was a factor as over 70% feared for their safety after wearing the gown[12]. Another study also found out that smaller and private hospital gowns are more hygienic due to higher levels of cleanliness. The sanitary condition of the gown plays a major role as patients were concerned that the gown has been used by other patients, and hence were no longer clean enough and that it may harbour infections from the previous user[13]. 37.6% of the respondents were uncomfortable with the nature of the material of the gown indicating that the gown was itchy and discomforting to the skin. This agrees with[11] that the respondents don't like the gown because it is non-absorbent, air impermeable and stuffy. Some of the respondents were concerned about their privacy as the gown was too transparent and the back of the gown is opened with some a twill-tie cutoff hence exposing the patients back as the study show only 31.0% said the design of the gown is Comfortable but 37.7% said they didn't like the design of the gown. This agrees with [14] that hospital gown is a major source of embarrassment for female patients especially adolescents.

## Conclusion

Some patients were unwilling to wear the x-ray changing gown due to their perception of its hygiene state as it is commonly linked to a source of nosocomial infection such as COVID-19. Some other patients perceived that the design of the x-ray changing gown is not fitting to their cultural and religious beliefs, as such, they are unwilling to use it.

## References

1. Balci K and selcen F (2016) on isolation gowns in health care settings, laboratory studies, regulations and standard of potential barriers of gown selection and use. American journal of infection control vol.44 (1) 104-111.
2. Christy M Lucas, Molly C Mack, Jill Majeski, Scott H Maurer (2024). Exploring perceptions of inpatient hospital attire in children with cancer. *Pediatr Blood Cancer*. 4:e31167. Doi: 10.1002/pbc.31167.
3. Chen H, Dong P, Zhong P (2024). The effect of new design of patient gowns for prone position patients after vitrectomy: A non-randomized, concurrent, control study. *Technol Health Care*. 32 (1): 55-62. Doi: 10.3233/THC-220455.
4. Fix, G.M., Van Deusen Lukas, C., Bolton, R.E., Hill, J.N., Mueller, N., Cavela, S.L. and Bokhour, B.G. (2018) patients centred care is a way of doing thing. *Health expectation*.
5. Vincent L, Ibrahim M, Kitchin J, Pickering C, Wilson J, Sorrentino E, Salvagno C, Earl L, Ma L, Simpson K, Baker R, Mc Culloch P, (2023). Reduction in transfer of micro-organism between patients and staff using short-sleeved gowns and hand/arm hygiene in intensive care during COVID-19 pandemic: A simulation-based randomized trial. *J Intensive Care Soc*. 24 (3): 265-276. Doi: 10.1177/17511437221116472.

6. Matiti M.R., (2011) patient dignity in nursing . phenomenological thesis , unpublished thesis , University of Hudders field school of education and professional development.
7. Mc Neill L. (2018). Fashion and women's self concept .A typology for self fashioning using clothing. *Journal of fashion management and marketing*, 22,-82-98.
8. Christy M Lucas, Molly C Mack, Jill Majeski, Scott H Maurer (2024). Exploring perceptions of inpatient hospital attire in children with cancer. *Pediatr Blood Cancer*. 4:e31167. Doi: 10.1002/psc.31167.
9. Kastelic DR, Volpato LE, de Campos Neves AT, Aranha AM, Martin CC, (2021). Do children and adolescents prefer paediatric attire over white attire during dental appointment? A meta-analysis of prevalence data. *Int. J Clin. Pediatr Dent*. 14 (1): 14-29 [10] Pan American Health Organization(2020) Hospital readiness actions for the response to COVID-19
10. Kim E Van Nieuwenhuizen, Hans J Friedericy, sjaak Van der Linden, Frank Willem Jansen, Anne C Van der Eijk (2024). User experience of wearing comfort of reusable versus disposable surgical gowns and environmental perspectives: A cross-sectional survey. *BJOG*. 131 (5): 709-715. Doi: 10.1111/1471-0528.17685.
11. Lui L, Haofeng Z, Gege L, Yulu L, Ling jie.J, Huilanc C, Weijie G, (2016), Attitude of hospitalized patients towards wearing patient clothing in Tianjin,China. *Int. J. Of Nur sciences* vol. 3(4).
12. Kilinc-Balci FS (2023). Investigation of the barrier performance of disposable isolation gowns. *Am J Infect. Control*. 51 (12): 1401-1405. Doi: 10.1016/J.ajic.2023.09.003
13. Chen H, Dong P, Zhong P (2024). The effect of new design of patient gowns for prone position patients after vitrectomy: A non-randomized, concurrent, control study. *Technol Health Care*. 32 (1): 55-62. Doi: 10.3233/THC-220455.
14. Sam W (2014) feasibility of encouraging patients to wear their own clothes rather than hospital gowns. *INT.journal of Nuts.science* vol5 (7).
15. Zhang F, Demiris Y (2022). Learning garment manipulation toward robot-assisted dressing. *Sci Robot*. 7(65): eabm6010. Doi: 10.1126/Scirobotics.abm6010.
16. Phillips J, Wood E, L oveart T, McKinlay E, MacDonald C, Parker G, Gray L, (2023). New Zealand hospice staff perspectives on X'cellent gowns 'for big bodied' palliative care patients: a qualitative study. *J Prim Health Care*. 15 (3): 238-245. Doi: 10.1071/HC23009.
17. Vincent L, Ibrahim M, Kitchin J, Pickering C, Wilson J, Sorrentino E, Salvagno C, Earl L, Ma L, Simpson K, Baker R, Mc Culloch P, (2023). Reduction in transfer of micro-organism between patients and staff using short-sleeved gowns and hand/arm hygiene in intensive care during COVID-19 pandemic: A simulation-based randomized trial. *J Intensive Care Soc*. 24 (3): 265-276. Doi: 10.1177/17511437221116472.
18. Gondy K, (2020). Beyond a hospital gown. *Fam Syst Health*. 38 (4): 493. Doi: 10.1037/fsh0000553.
19. Morton L, Cogan N, Kornfalt S, Porter Z, Georgiadis E, (2020). Baring all: The impact of the hospital gown on patient well-being. *Br J Health Psychol*. 25 (3): 452-473. Doi: 1111/bjhp.12416.
20. Syed S, Stilwell P, Chevriel J, Adair C, Markle G, Rockwood K, (2020). Comprehensive design consideration for a new hospital gown: a patient oriented qualitative study. *CMAJ open*. 20;10 (4): E1079-E1087.