Putting the "personal" back in personal protective equipment

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Abstract

The COVID-19 pandemic has resulted in widespread use of personal protective equipment (PPE) among healthcare workers. However, there are challenges to using standardized PPE, especially in the context of a diversifying society. This commentary discusses religious, racial, and ethnic barriers to comfortable and safe use of PPE. The objective is to raise awareness for these challenges that will prompt considerations for possible evidence-based solutions. Challenges around finding PPE that is effective but accommodates religious symbols such as hijabs, turbans, and facial hair are discussed. This commentary also describes the negative impacts of limited PPE suitable for diverse populations. Some of the available resources for healthcare workers are explored, as well as several solutions around PPE placement, sizing, and supply. Overall, more research is required, especially given that PPE is now commonplace outside of hospitals and widely used in the public.

Keywords: personal protective equipment, diversity, religious differences, individual fit

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Introduction

The COVID-19 pandemic has brought about many changes, one of which is the increased use of personal protective equipment (PPE) inside and outside of hospitals. PPE was once only indicated for certain patient contact precautions, such as methicillin-resistant *S. aureus* and tuberculosis among others. It is now commonplace in family practices and on hospital wards as a precaution against COVID-19. PPE in its various forms has also become a symbol of the COVID-19 pandemic. Shared Health Manitoba has made available evidence-based guidelines for the proper use of PPE in healthcare settings.[1] These requirements help ensure that PPE will fit individuals snugly, whether on the head or on the face. However, manufacturing PPE in mass amounts is challenging. Hospitals carry several different sizes of PPE to accommodate differences in healthcare providers' size,[2] but this neglects other factors that differ between healthcare providers. These include cultural and religious differences that make it challenging for healthcare workers to wear PPE not specifically designed for them. Turbans, hijabs, and facial hair are all examples of common religious symbols in diverse communities which cannot always be accommodated by PPE currently available in our healthcare systems.

This commentary will highlight challenges that standardized PPE poses for increasing diverse healthcare workers. The paucity of discussion around challenges associated with PPE compels diverse healthcare workers to tolerate these challenges without support. As a result, it requires individuals to develop creative alternatives for themselves. In an era where proper fitting PPE has become a necessity for the safety of frontline healthcare workers, an examination of the suitability of PPE is warranted.

PPE in the operating room

While the COVID-19 pandemic highlights the importance of PPE to reduce viral transmission, it also highlights challenges that some individuals face in order to find the right PPE for themselves. Barriers around PPE existed even before the pandemic occurred. Surgical caps and hoods used in the hospital operating rooms represent one of these barriers. For Muslim women and Sikh men, religious head coverings including the hijab and the turban are not allowed in operating rooms without appropriate PPE to cover them. Removing these religious symbols in a public setting is not simple. In fact, it defies some of individuals' cultural beliefs. It can also be a source of internal conflict as it falls to these individuals to find a balance between their personal religious attire and hospital protocols for infection control and prevention. One available option is to wear surgical hoods, which provide more head covering than scrub caps. This is a viable alternative for some. How-

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ever, it nevertheless presents its own challenges. Availability is a concern as hospitals may carry limited sizes and styles of surgical hoods. Despite the availability of surgical hoods, those that are supplied may still not be large enough to fully cover the head of a Sikh man or the neck of a Hijabi woman. These are important considerations because they force individuals to make compromises with their religious or cultural identities. Furthermore, women who wear hijabs, and who wish to keep their arms covered, must also obtain access to a scrub jacket or alternative covering until they scrub in. This can be difficult if scrub jackets are not dispensed in the same place as scrubs or other forms of PPE. The resulting dilemma forces them to expose more of their arms than they may be comfortable with. We recommend a potential solution that could also have a profound impact on affected individuals: relocate scrub jackets to a centralized location alongside other PPE.

PPE outside of the operating room

Outside of the operating room, masks have become routine equipment for healthcare workers. The N-95 masks required for aerosol generating procedures require fit testing. A clean-shaven face is preferred because adequate respirator fit decreases significantly with increasing facial hair.[3] This creates an uncomfortable situation for individuals who cannot or do not wish to remove facial hair for cultural or religious reasons. For example, the practice of keeping one's naturally grown hair in Sikhism is considered an emblem of faith. It demonstrates respect for the way in which one was created.[4] Asking Sikh men to compromise their religious beliefs to fit an N-95 can precipitate moral injury.[5] Appropriate alternatives should be made available to ameliorate this challenge. For example, a Sikh transplant surgeon in Manchester pioneered the "Singh Thattha" technique which allows men with facial hair who cannot shave for religious reasons to achieve an appropriate mask-face seal.[6] This technique had a pass rate of 25/27 (92.6%) by qualitative and 5/5 (100%) by quantitative fit test in full-bearded individuals. It is important that alternatives such as this are explored and, more importantly, are made widely available.

Ear loop face masks are also a challenge for providers who wear head coverings, especially those who are unable to remove them for religious reasons such as turbans or hijabs. However, masks are not just an obstacle for those with "removable" religious headwear per se. They are also a barrier for those born with structural or anatomical features out of their control that preclude satisfactory fit testing. A nonrandomized study of 74 anesthesia providers at a single centre in the United States reported that 95% of men passed mask fit tests compared to 85% of women.[7] In a survey of over 6000 healthcare workers in Australia, "higher fit test pass rates were found in Caucasian (90%) compared to Asian (84%) healthcare workers."[8] Asian women in particular have been shown to have low initial fit-pass rates, with an average of 60%,[9,10] despite comprising a substantial proportion of the healthcare workforce.[11] This discrepancy shows that certain groups may require alternatives to an N-95 mask to obtain satisfactory airborne protection. Depending on the availability of alternative PPE, these populations may be systemically disadvantaged. Thus, hospitals should ensure adequate stock of various mask models and sizes that are appropriate for all facial structures.

Implications for future research

The challenges described herein should be a catalyst for discussion among healthcare workers about accessibility. Further research into manufacturing racially and religiously sensitive PPE that could be adapted to supply healthcare institutions globally is needed. Some online media presences have created instructional videos for Hijabi medical students to learn how to wear and remove their PPE in a method that is culturally sensitive and procedurally safe.[12] Such content would be more credible and useful if institutions developed their own instructional material or incorporated similar videos within their medical education curricula. Providing tie-back masks, such as those offered in surgical units, throughout all hospital units has been recommended by the CDC and can effectively accommodate religious headwear.[13] Hospital administration could also encourage conversations around suitable PPE among healthcare workers and between other institutions. PPE should be obtained from suppliers that ensure a variety of sizes and alternatives. Throughout, ongoing feedback from hospital staff will be paramount to ensure their needs are being adequately accommodated.

Conclusion

One of the many healthcare issues that the COVID-19 pandemic revealed are the challenges surrounding PPE. Wearing PPE for hours at a time is uncomfortable. This is further exacerbated for those who may need to remove religious attire to accommodate their PPE. It is also a problem for individuals whose PPE effectiveness is compromised due to unavailability of viable alternatives. Where diversity provides an essential perspective, it also brings unforeseen challenges. Medicine is no exception. The evolving medical workforce deserves careful consideration of challenges uniquely due to diversity. Healthcare workers should feel comfortable while working and feel acknowledged in the environment that they dedicate countless hours to. As the pandemic progresses, it is a realistic hope that small changes can be made in hospitals in order to accommodate unique PPE requirements of the diverse medical workforce.

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