

Evaluating Awareness, Perceptions and Practices Regarding Medication Errors in General Public for Achieving Medication Safety. A Questionnaire-Based Survey

SH. Lavanya^{1*} and L. Kalpana²

Department of Pharmacology, BGS Global Institute of Medical Sciences,
Bangalore-560060, Karnataka, India.

*Corresponding Author E-mail:lavanyasumanthraj@gmail.com

<https://dx.doi.org/10.13005/bpj/2597>

(Received: 23 March 2022; accepted: 18 November 2022)

Medication errors are a serious threat to patient's safety. General public are important stakeholders in ensuring medication safety. However, majority are not well-informed about safe use of medicines. To evaluate knowledge, perception and practices of general public regarding medication errors and to create awareness about 'Responsible Use of Medicines' to achieve medication safety. Cross-sectional, descriptive, questionnaire-based study that utilized an electronic-survey form to gather information from respondents. The pre-validated questionnaire included various sections to elicit responses regarding demographic details, knowledge, perceptions and practices of general population regarding medication use and safety on a three-point scale, was circulated on social media platforms. On study completion, an awareness video & educational e-booklet based on WHO's 'Medication Without Harm' guidelines were circulated. Statistical analysis used: Descriptive statistics used. Categorical-data was represented in the form of frequencies and proportions. Majority (43.2%) of participants belonged to 31-40 years age-group and 51.5% had Master's degree. Around 76.2% were aware of the serious implications of medication errors and 69.6% felt that these could be prevented. Approximately >60% believed that healthcare professionals were responsible for medication errors. Majority had safe medication usage practices like informing doctors about other medications, enquiring about drug dosage, proper route, side effects and checking for expiry date. The most common errors committed included not taking prescribed drugs (52%), inappropriate method (25%), incomplete course (19.3%) and wrong dose (7.9%). Ensuring medication safety is the cornerstone of prudent medical care. Creating awareness among patients, public & caregivers holds the key for minimizing medication-errors.

Keywords: Awareness; General Public; Medication errors; Medication safety; Perceptions; Practices.

Patient safety is the primary concern of healthcare fraternity worldwide. Pharmacotherapy or medication therapy is an integral component of health care; but happens to be an error-prone process¹. As per the Institute of Medicine's (IOM) first Quality Chasm report, medication-related errors accounted for 'one out of every 131

outpatient deaths, and one out of 854 inpatient deaths'². In addition, these errors may lead to outcomes like increased length of hospital stay, added workload, high medical expenses and litigations³.

According to the National Coordinating Council for Medication Error Reporting and

Prevention, a medication error is defined as “any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the healthcare professional, patient, or consumer”^{4,5}. This definition highlights the human side of medication errors and also identifies the various stakeholders in medication safety. The Medication Safety Curriculum Guide by the World Health Organization (WHO) has specified that safe medication is a team activity that involves patients, their families and informal caregivers along with a wide range of healthcare professionals. Patients, being the end-users in the medication use cycle can contribute immensely to minimising the number of medication errors. The public are often made to be passive recipients of health care rather than being informed and empowered⁶. Reports have suggested that vigilant, active and well-informed patients may be able to intercept 3% of medication errors⁷. The ‘Medication Without Harm’ initiative by the WHO emphasizes that patients and public education, engagement and empowerment are critical elements in achieving medication safety⁶. Most of the literature available on medication errors is focused in healthcare settings and healthcare professionals. Only a handful of studies have assessed public perceptions on medication errors^{3,8,9}. Hence the current study was conducted not just to evaluate knowledge, perception and practices of general public regarding medication usage & errors, but also to create awareness about responsible medication use and safety.

MATERIALS AND METHODS

Study design & Methodology

This was a cross-sectional, descriptive, questionnaire-based study that included public or common man of both genders aged e” 18 years, conducted between November 2020 and May 2021. People working in healthcare sectors (all healthcare professionals) were excluded from the study to avoid knowledge bias. Due to the Covid-19 pandemic situation, a questionnaire was prepared in the electronic format. Since the study involved the use of an e-questionnaire, only people who were cognizant with its use could participate in the study. The questionnaire was pre-validated and a pilot-run was conducted with 10 random individuals to

diagnose technical glitches as well as to test for the clarity and reliability of the tool. A convenience sample of 200 participants was decided due to the challenges involved during the pandemic situation. The results of the pilot-run were not included in the study.

Study Tools

The Google form included three sections; Section-1 included the consent form and demographic details. Section-2 included eight items to evaluate the knowledge and perceptions of respondents towards medication usage & errors. Section-3 included eight items related to understanding practices of the general population regarding medication usage. The Google form was circulated through social media platforms like WhatsApp, electronic mail etc. The respondents were further requested to forward the form to their acquaintances and family members which could eventually lead to a ‘snowballing’ effect so as to increase the number of responses.

On completion of study, the participants received educational tool kits which included ‘Medication Without Harm’ video by WHO and an educational e-booklet prepared by the researchers which was based on the WHO Global Patient Safety Campaign Brochure^{6, 10}. The e-booklet focused on varied concepts of medication safety namely definition, stakeholders in medication safety, role of informed patients/consumers in ensuring medication safety, how to report medication errors and tips on minimizing errors by following principles of ‘Know, Inform, Ask & Check’⁶. Content validity of the education booklet was assessed by subject experts. In addition, feedback from random participants was solicited regarding the booklet and necessary modifications were made to enhance clarity of concepts before circulation.

Ethical Considerations

The ethical principles of Declaration of Helsinki were followed and permission to conduct the study was obtained from Institutional Ethics Committee & an informed e-consent was obtained from all study participants.

Statistical analysis

Responses were automatically recorded in the Microsoft-Excel sheet & the same was analyzed using SPSS-22 version software. Categorical-data was represented in the form of frequencies and

proportions. Graphical representation of data: MS Excel and MS Word were used to obtain various types of graphs such as bar diagram.

RESULTS AND DISCUSSION

Demographic details of study subjects

A total of 227 individuals responded to the Google-form. Females accounted to 62.6% (n=142) and 37.4% (n=85) were males. The age of the respondents ranged from 18-80 years, with majority of subjects belonging to the age group of 31 to 40 years (43.2%). Among the participants 54.2% were employed professionals, 13% - retired professionals, 12.8% - homemakers, 8.1% students and 11.9% were self employed. In the study 51.5% of the individuals had a Master's or higher degree and 41.4% had a bachelor's degree.

Knowledge & Perceptions of General Public towards medication usage & errors

Around one-third of the participants believed that medications were totally safe. Many were aware of the term 'medication errors' and also about their serious implications. Approximately 70% believed that errors could be prevented but hadn't reported any so far. Majority (89.4%)

perceived the need to prevent medication errors (Table 1).

It was a general notion amongst the public that healthcare professionals (HCPs) which included doctors, nurses and pharmacists to be the major stakeholders responsible for medication errors and approximately 50% believed that patients could be held accountable. Most of them wanted legal action or financial compensation as the quantum of action towards HCPs for causing medication errors (Figure 1).

General Practices of the public with regards to medication usage

Majority of the study population agreed to have practised safe medication usage in terms of informing doctors about other medications, checking for expiry date and cross verifying the dispensed drug and following instructions on drug leaflets (Table 2). Most of the enquiries made to doctors were in terms of how to take medicines, dosage, frequency and side effects (Figure 2). The most common errors committed as reported by respondents included not taking prescribed drugs, inappropriate method and not completing the drug course (Figure 3).

Table 1. Knowledge and perceptions of public regarding Medication errors

No.	Parameter	Yes	No	Not sure
1	Are medications totally safe?	68 (30%)	77 (33.9%)	82 (36.1%)
2	Have you heard about the term 'Medication Errors'?	153 (67.4%)	64 (28.2%)	10 (4.4%)
3	Are Medication Errors a serious threat to people's life?	173 (76.2%)	11 (4.8%)	43 (18.9%)
4	Can Medication Errors be prevented?	158 (69.6%)	3 (1.3%)	66 (29.1%)
5	Have you ever reported any Medication Error?	25 (11%)	177 (78%)	25 (11%)
6	Do you perceive the need to prevent Medication Error?	203 (89.4%)	6 (2.6%)	18 (7.9%)

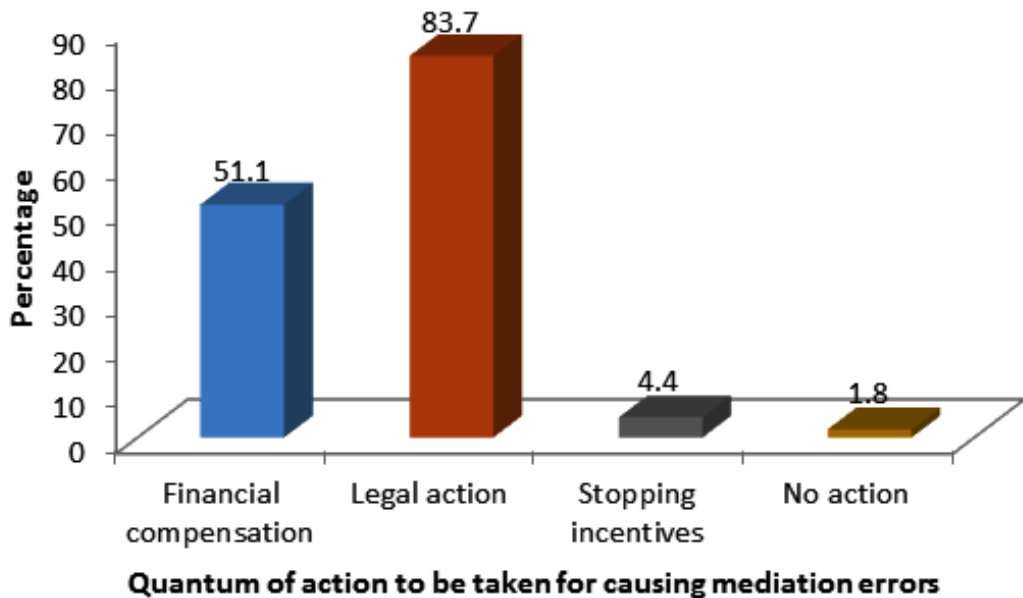
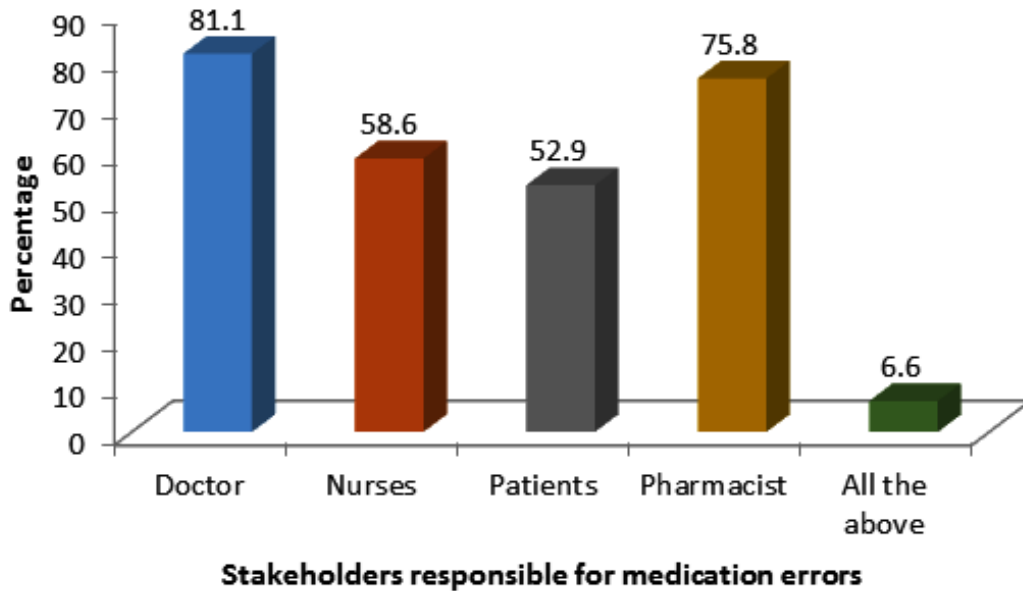
Table 2. Practices of the general population with regards to medication use

No.	Parameter	Yes	No	Not sure
1	Do you inform your doctor about your other medications (dietary supplements/ herbals/ multivitamins)?	198 (87.2%)	29 (12.8%)	0
2	Do you cross verify prescribed & dispensed drug?	199 (87.7%)	16 (7%)	12 (5.3%)
3	Do you check for expiry date?	219 (96.5%)	1 (0.4%)	7 (3.1%)
4	Do you read medicine labels/ leaflets and follow directions?	172 (75.8%)	18 (7.9%)	37 (16.3%)
5	Do you keep your medication list with you when you visit your doctor?	116 (51.1%)	111 (48.9%)	0
6	Is your family aware of your medications?	149 (65.6%)	37 (16.3%)	41 (18.1%)

DISCUSSION

Traditionally medication safety has been considered as the sole responsibility of HCPs. However the need to involve patients, their families

and care-givers in planning and implementation of their health care is being increasingly recognized¹¹. A survey of the general public’s knowledge about medication usage and practices is more likely to reflect their awareness levels and preparedness for



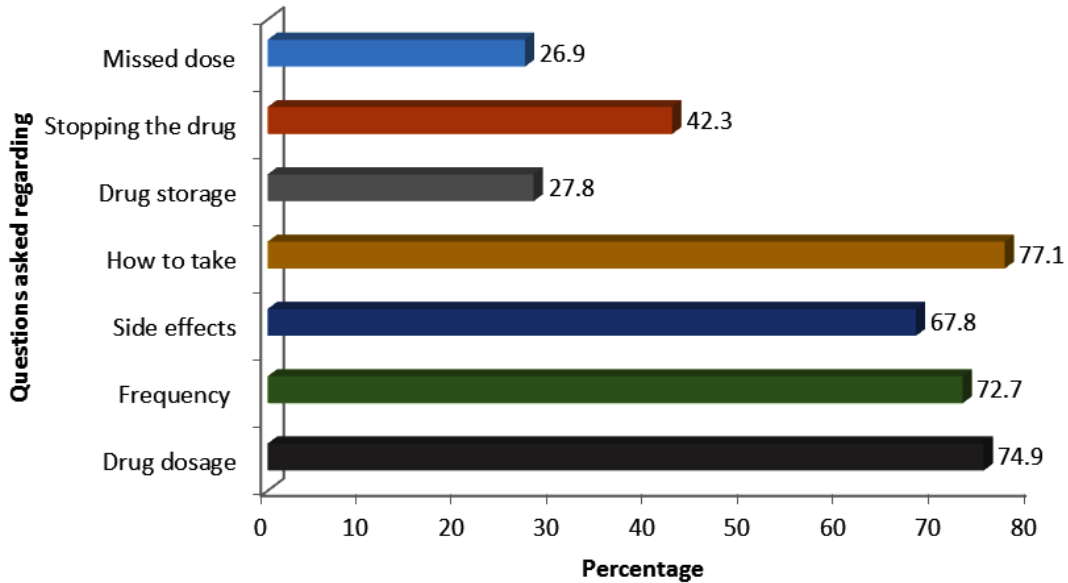
*Multiple responses elicited

Fig. 1. Perceptions of public regarding stakeholders in medication errors & the action to be taken*

taking up more active roles in decision making and reporting of errors.

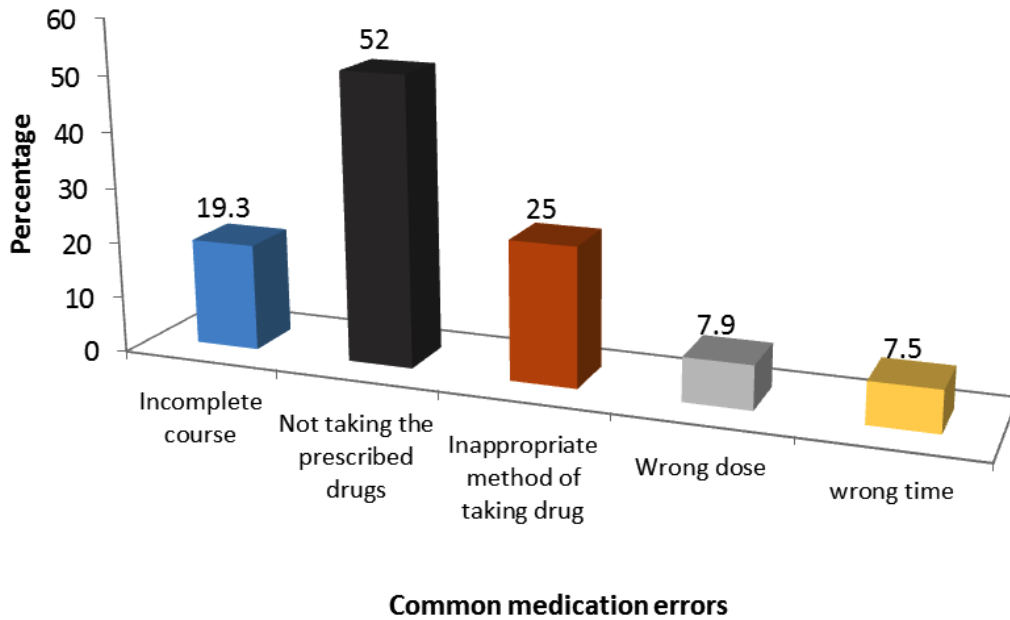
The respondents of our study were relatively well-educated with majority being

bachelor & master degree holders (92.9% in total). They were well informed about the serious threats posed by medication errors (76.2%). The literacy rates and awareness levels of respondents



*Multiple responses elicited

Fig. 2. Enquiries made by participants to doctors regarding medication usage*



*Multiple responses elicited

Fig. 3. Most common medication errors committed as reported by respondents*

were higher when compared to a study by Ponnu Shankar et al where 67.4% were graduates and 59.6% indicated that medication errors pose serious threats³. Around 70% of the respondents agreed that medication errors were preventable. It was overwhelming to see the felt need for preventing medication errors in H^{90%} of the participants. Yet, the area of concern was that despite the study population being aware of the need for reporting errors, 78% had never reported any. The results of the study were comparable to those reported by Shaikh J et al and Ponnu Shankar et al^{3,9}. These points indicate that public are receptive and need to be educated, encouraged and empowered to discuss and report medication-related problems.

A study by Leape et al had suggested that system problems are the primary cause of medication errors¹². Nevertheless, the findings of our study were in sharp contrast to those expressed in medical literature. Approximately 81% of the individuals believed physicians/ doctors to be the major contributors of errors followed by pharmacists and nurses. These points were comparable to findings of several studies where patients appear to blame individuals rather than the system^{3, 9, 13}. Though medication errors are a complex web of events and multi-factorial, the blame is often placed on healthcare professionals. The quantum of punishment as suggested by participants for these errors included legal action and financial compensation. Despite the study population being highly educated and informed, the blame for causality of errors was still placed on HCPs. A possible explanation for the expressed perspectives by respondents may be due to lack of understanding of the system errors and the complexities involved in healthcare delivery. This is a matter of concern and requires significant proactive efforts from healthcare givers to enhance public understanding and involve patients in decision making.

The analysis showed that majority of respondents practiced safe medication practices such as informing essential details to their doctors, that may interfere with drug prescribing as well as making necessary enquiries regarding drug handling; the findings being in-sync with previously conducted studies^{3,9}. Nonetheless, the practice of having medication lists during hospital visits and family involvement needs to be emphasized.

Despite being well informed, many respondents agreed to have not followed prescription orders which may amount to medication errors. The findings of our study stress the need for enhanced dissemination of patient-friendly information on safe medication practices and improved communication between HCPs and patients. Public and patient perspectives are welcome additions to the mounting body of literature on medication errors. These give us insights and a comprehensive understanding of errors and also help in the planning of initiatives to improve medication safety, restore public confidence and satisfaction with healthcare¹⁴.

Strengths & Limitations

The circulation of e-questionnaire in social media platforms was able to elicit responses from a wide range of individuals across the country. The objective of the study was not just confined to eliciting responses, but it was a sincere effort to spread awareness regarding medication errors through circulation of educational materials.

A major limitation of the study was that it was restricted to a subset of population who were cognizant with handling electronic-questionnaires. A robust study in a diverse population combined with direct interview of participants may give us better insights about the perceptions of general population. Finally, the extent of impact of the awareness programme in bringing about behavioural changes regarding medication safety needs to be ascertained through further research.

CONCLUSION

Medication errors are one of the critical patient safety issues faced by healthcare systems worldwide. Approximately 5.2 M errors occur annually in India adding to the burden on an already overwhelmed healthcare system^{15, 16}. Healthcare professionals are often blamed for the occurrence of any medication error. Therefore, educating people that medication safety requires concerted efforts from all stakeholders and is not one man's responsibility is of paramount significance. Patients, care-givers & general public play a vital role in the medication safety cycle. It is evident from literature that these stakeholders are motivated and are a critical link to implement change¹⁴. Understanding their perspectives,

recognizing them as a part of the healthcare team, educating and empowering them are vital for minimizing medication errors.

ACKNOWLEDGEMENTS

The researchers are indebted to all the study participants for their enthusiastic participation and unconditional support. We would like to express our deepest gratitude to the management and faculty of BSGSIMS for their guidance and timely help.

Conflict of Interest

There are no conflict of interest.

Funding Source

There is no funding sources.

REFERENCES

1. Abukhader I, Abukhader K. Effect of medication safety education program on intensive care nurses' knowledge regarding medication errors. *Journal of Biosciences and Medicines*. 2020 Jun 11;8(06):135.
2. Hughes RG, Blegen MA. Medication administration safety. *Patient safety and quality: An evidence-based handbook for nurses*. 2008 Apr.
3. Ponnusankar S, Roy RR, Babu S, Mohamed EB, Cyril S, Kamal M. A Descriptive Cross-Sectional Study on the Assessment of Public Knowledge, Attitude and Perception on Medication Errors. *Indian Journal of Pharmacy Practice*. 2017;10(4).
4. Medication Errors: Technical Series on Safer Primary Care. Geneva: World Health Organization; 2016.
5. Tariq RA, Vashisht R, Sinha A, et al. Medication Dispensing Errors And Prevention. [Updated 2021 Jul 25]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK519065/>
6. Challenge WG. Medication without harm. World Health Organization. 2017.
7. Informed patients can help prevent medication errors [Internet]. European Patients Forum. [place unknown: publisher unknown: date unknown]; Available from <https://www.eu-patient.eu/news/News-Archive/informed-patients-can-help-prevent-medication-errors/>
8. Northcott H, Vanderheyden L, Northcott J, Adair C, McBrien-Morrison C, Norton P, Cowell J. Perceptions of preventable medical errors in Alberta, Canada. *International journal for quality in health care*. 2008 Apr 1;20(2):115-22.
9. Shaikh J, Al-Ruzaiqi HS. Knowledge and perception of preventable medical errors in Sultanate of Oman. *Madridge J Nurs*. 2019 Jan 28;4(1):134-8.
10. World Health Organization. WHO: Medication Without Harm [video file] 2017 Oct 6. Available from: <https://www.youtube.com/watch?v=MWUM7LIXDeA>.
11. Longtin Y, Sax H, Leape LL, Sheridan SE, Donaldson L, Pittet D. Patient participation: current knowledge and applicability to patient safety. In *Mayo Clinic Proceedings* 2010 Jan 1 (Vol. 85, No. 1, pp. 53-62). Elsevier.
12. Leape LL, Berwick DM, Bates DW. What practices will most improve safety?: evidence-based medicine meets patient safety. *Jama*. 2002 Jul 24;288(4):501-7.
13. Vanderheyden LC, Northcott HC, Adair CE, McBrien-Morrison C, Meadows LM, Norton P, Cowell J. Reports of preventable medical errors from the Alberta Patient Safety Survey 2004. *Healthc Q*. 2005 Oct 15;8(107):14.
14. Corbett CF, Dupler AE, Smith S, E'lise MB, Bolkan CR. Transitional care medication safety: Stakeholders' perspectives. In *Advances in Patient Safety and Medical Liability* [Internet] 2017 Aug. Agency for Healthcare Research and Quality (US).
15. Jha AK, Larizgoitia I, Audera-Lopez C, Prasopa-Plaizier N, Waters H, Bates DW. The global burden of unsafe medical care: Analytic modeling of observational studies. *BMJ Quality & Safety*, 22 (10), 809–815.
16. Zirpe KG, Seta B, Gholap S, Aurangabadi K, Gurav SK, Deshmukh AM, Wankhede P, Suryawanshi P, Vasanth S, Kurian M, Philip E. Incidence of Medication Error in Critical Care Unit of a Tertiary Care Hospital: Where Do We Stand? *Indian Journal of Critical Care Medicine: Peer-reviewed, Official Publication of Indian Society of Critical Care Medicine*. 2020 Sep;24(9):799.