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Research paper

The impact of a “short-term” basic intensive care training program on the knowledge of nonintensivist doctors during the COVID-19 pandemic: An experience from a population-dense low- and middle-income country

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ABSTRACT

Background: The utility of basic intensive care unit (ICU) training comprising a “1-day course” has been scientifically evaluated and reported in very few studies, with almost no such study from resource-limited settings.
Aim: The study assessed the utility of basic ICU training comprising of a “1-day course” in increasing the knowledge of nonintensivist doctors.
Materials and methods: This is an observational study conducted at a medical university in North India in 2020. The participants were nonintensivist doctors attending the course. The course was designed by intensivists, and it had four domains. The participants were categorised on the basis of their duration of ICU experience and broad speciality. Pretest and posttest was administered, which was analysed to ascertain the gain in the knowledge score.
Results: A total of 252 participants were included, of which the majority were from the clinical medicine speciality (85.3%) and had ICU experience of 1–6 months (47.6%). There was a significant improvement in the mean total score of the participants after training from 14/25 to 19/25, with a mean difference (MD) of 5.02 ($p < 0.001$). Based on ICU experience, in groups I (<1 month), II (1–6 months), and III (>6 months), there was a significant improvement in the total score of the participants after training with MD with 95% confidence interval (CI) limits of 5.27 (4.65–5.90), 4.70 (4.38–5.02), and 5.33 (4.89–5.78), respectively. In the clinical surgery specialty ($n = 37$), there was a significant improvement in the total score after training from 11/25 to 16.4/25 with an MD (95% CI limits) of 5.38 (4.4–6.3). Similarly, in the clinical medicine group ($n = 215$), the MD (95% CI limits) score after training was 4.95 (4.71–5.20), from 14.5/25 to 19.5/25. In feedback, more than half of the participants showed interest in joining ICU after training.
Conclusions: Training nonintensivist doctors for 1 day can be useful in improving their knowledge, regardless of their prior ICU experience and speciality.

1. Introduction

The intensive care unit (ICU) is a complex and stressful environment posing many challenges for healthcare providers. Although ample evidence indicates that care offered by subspecialists trained in critical care medicine (CCM) improves patient outcomes, the scarcity of workforce and lack of trained critical care

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staff posed a significant challenge while handling the COVID-19 pandemic.[1–5] This was reflected even in high-income countries with high-quality medical care and large economies.[6,7]

It emphasises the fact that there is an urgent need to train nonintensivists in critical care, which can be of utmost utility during pandemics like COVID-19. Even in high-income countries like the United States, only 36.8% of critically ill patients were cared for by intensivists.[8] Many medical schools do not teach critical care, and studies have consistently shown a failure to recognise and appropriately manage critically ill patients by junior medical staff.[9,10] There are many short-term training programs like Fundamental Critical Care Support, developed by the Society of Critical Care Medicine, and Basic Assessment and Support in Intensive Care (BASIC), developed by the Chinese University of Hong Kong. These courses have shown promising results in training the medical fraternity in critical care.[11] While such certification courses can be an effective answer to training nonintensivists, the lack of certified trainers (instructors), difficulty in scheduling appointments for the course, fixing the time for a considerable number of participants, and its financial implications pose significant challenges in pandemic times.[12] Additionally, extended duration of the training period, lack of training in areas like COVID-19 infection, and hands-on training on new equipment like high-flow nasal oxygenation and new ventilators issued under therapeutic goods exemption, also referred to as "rapidly manufactured ventilator systems", without FDA/European CE certification necessitate the development of institution-based training modules.[11] Similarly, to handle pandemics like COVID-19 efficiently, physicians need the incorporation of infectious disease training along with strategies to prevent self-contamination in the institutional training programs.[13,14]

Training is an integral part of hospital preparation in times of pandemics.[15,16] However, to our knowledge, the utility of basic ICU training comprising a "1-day course" has been scientifically evaluated and reported in very few studies, with almost no such study from resource-limited settings.[17,18] This pandemic caused a sudden surge in the critical care workforce. It also precluded training in large numbers due to fear of transmission of infection, necessitating training for only short periods and with a limited number of participants.[19–21] The physical presence of the trainee and trainer (in-person training) is required rather than "virtual" due to the necessity of hands-on training on the gadgets and skill development/enhancement, especially for nonintensivists.[22,23] More so, hands-on training may also allow the trainees to interact with the trainer on an "as and when" required basis and clear their doubts. It may also help to better understand the ICU paraphernalia with which they are not well versed. A study assessing the impact of an in-person versus remote simulation course in 4th-year medical students has reported statistically significant improvement in learner comfort across all technical, behavioural, and cognitive domains in the in-person training group compared to the telesimulation group.[24] A recent survey was conducted among paediatric residents to assess confidence in disaster medicine knowledge, skills, and preferred educational methods. The survey reported that virtual education might help provide a foundation. However, in-person simulation is the preferred method for effective training.[24]

The objective of the study was to assess the effectiveness of training nonintensivist doctors across various specialities participating in a rapid course consisting of "1 day" and analyse feedback obtained from trainees.

2. Materials and methods

It was a single-centre, prospective, observational study conducted in a 4000-bed medical university of North India from 17th April to 25th June 2020. The study was nonfunded and approved by the Institutional Ethics Committee of the university (IEC: 101st ECM IB/P4). Written consent was taken from the participants before enrolling them in the study. Participants were identified based on the posting orders (roster), which are released 1 week before their scheduled ICU posting, by the human resource management committee of the university. All the resident doctors whose names were on the roster were eligible. They were suggested in the posting orders to enrol in the training program before going to the ICU. Based on that suggestion, enrolment took place on the first-come-first-serve basis as the training room could accommodate a maximum of 30 participants per day, with all airborne precautions required. Though the ICU training was suggested in their posting orders, a few did not opt for it. Only those who registered for the training were included in the analysis.

All the participants who undertook this training were posted in ICUs within 3–5 days. This training was given to all resident doctors before the first posting in COVID ICUs. No such training was given to participants after their deployment. Baseline data were collected from the information sheet of consent (demographic details, designation), filled by the participant before enrolment into the course. Details regarding broad speciality and duration of prior ICU experience were taken from the pretest and posttest anonymised data as entered by the participant. The participants were categorised based on broad speciality and duration of ICU experience. Broad specialities were clinical medicine which included specialities like internal medicine, paediatrics, anaesthesia, physical medicine & rehabilitation, respiratory medicine, emergency medicine, cardiology, rheumatology, and clinical surgery group, which included neurosurgery, gastro surgery, trauma surgery, cardiovascular & thoracic surgery, endocrine surgery, obstetrics & gynaecology, and orthopaedic surgery. Based on their prior ICU experience, three categories were defined: Group I: 0–1 month; Group II: 1–6 months; and Group III: more than 6 months (See Supplementary Table 1).

2.1. Designing teaching module and the making of assessment paper

Two intensivists led the design of the course (AvAg and SSS, each having >5 years of teaching experience in CCM), including the selection of topics, pretest, posttest, and feedback form preparation. Based on the two rounds (24 h apart) of core committee members (AvAg, SSS, SS, and SuSa) discussions, the lecture topics were decided, which consisted of teaching in the following four domains: COVID-19, airway and mechanical ventilation (AMV), arterial blood gas (ABG) analysis, and general ICU care and resuscitation (GICR). Independent review about our ICU training was obtained from faculty members of other departments before conducting the training program. Those who contributed significantly to the curriculum were even included in the study. The content and schedule of the training program are mentioned in Table 1. Apart from basic ICU training, another mandatory training program was going on at the university teaching aspects like COVID-19 diagnosis and management (sample collection and transport, donning and doffing of personal protective equipment, basic medical management of COVID-19, biomedical waste management, infection control practices, surface cleaning, and dead body disposal), aimed at increasing staff safety and creating a safe environment for proper functioning.

2.2. Assessment of the impact of the teaching program

A pretest–posttest model was used to assess baseline and posttraining knowledge. The posttest was taken after the end of the teaching curriculum on the same day by evening. It also contained a

Table 1
"One-day" basic ICU training program curriculum.

Time allotted	Activity	Topic
09:00–09:10	Introduction	Introduction to the course
09:10–09:30	Multiple-choice question test	Pretest
09:30–10:00	Didactic lecture	COVID-19 overview
10:00–10:30	Didactic lecture	GICR: General management of critically ill patients: monitoring and resuscitation
10:30–11:00	Didactic lecture	Airway management and oxygen therapy in COVID-19
11:00–11:30	Didactic lecture	Basics of mechanical ventilation
11:30–12:00	Didactic lecture	Step by step ABG analysis
12:00–12:30	Didactic lecture	Management of refractory hypoxaemia
12:30–13:00	Interaction	Question and answers
13:00–14:00	Recess	Lunch break
14:00–17:00	Hands on/skill development/enhancement stations (4 stations each 45 min) 4 groups of trainees on rotation basis	Station 1: General ICU care, monitoring, and documentation Station 2: Airway management and oxygen therapy Station 3: Cardiopulmonary resuscitation Station 4: Mechanical ventilation
17:00–17:20	Multiple-choice question test	Posttest
17:20–17:30	Completion	Vote of thanks/feedback assessment

ABG, arterial blood gas; GICR, general ICU care & resuscitation; ICU, intensive care unit.

feedback form intended to improve the course if it had to be organised later. Based on the committee's decision, the format of the pretest and posttest question papers comprised certain "must-know things", with a particular focus on airway management and resuscitation domains, which would be compulsorily needed while working in COVID ICUs. After four meetings among the core committee members, a consensus was reached to include 25 multiple-choice questions with a single best answer and an allotted test time of 20 min. One mark was allotted for each correct answer and zero for the wrong answer, with no negative marking. The same pretest and posttest questions were given to all trainees, thus avoiding variability. The pretest was pilot tested with the first 15 participants, which were not included in the analysis.

The paper comprised interspersed questions assessing the four domains: (i) COVID-19 overview: symptomology, microbiology, drugs, and isolation recommendation of COVID-19 patients (16% questions); (ii) ABG analysis: identification of various acid base abnormalities and its causes (16% questions); (iii) AMV domain: oxygen therapy devices like nasal prongs, face mask, face mask with nonrebreathing bag, high-flow nasal oxygenation, noninvasive ventilation, and basics of invasive mechanical ventilation (MV) in ARDS including calculation of tidal volume based on ideal body weight, various modes, monitoring MV, handling new ventilators supplied during pandemic times, management of refractory hypoxaemia, and troubleshooting of MV alarms (40% questions); and (iv) GICR domain: correctable causes of cardiac arrest (5Hs: hypoxia, hypokalaemia/hyperkalaemia, hydrogen ions: acidosis, and hypothermia and 5Ts: toxins, tamponade, tension pneumothorax, thrombus: coronary and pulmonary), shockable rhythms and their management, components of FAST HUGS BID: feeding, analgesia, sedation, thromboprophylaxis, head end elevation, ulcer prophylaxis, glycaemic control, spontaneous breathing trial, bowel movement, indwelling catheter care and de-escalation, placing central venous catheters, resuscitation fluid, and vasopressor of choice in septic shock (28% questions). The pretest and posttest multiple-choice question papers were assessed based on overall marks and marks obtained in each of the four domains.

This "1-day" ICU training program was conducted in a well-ventilated room with a limited number of participants to 15–30 participants/day, following the basic principles of infection control during the pandemic like social distancing, avoidance of overcrowding, mandatory mask to be worn by each participant along with infrared forehead temperature screening, and use of frequent handwashing. The posttraining subjective assessment of the training courses (topic selection, knowledge increase, satisfaction with training, confidence to manage ICU and joining ICU) was obtained from the participants. The feedback section included five questions with a five-point rating scale from 1 to 5, where 1 = very bad to 5 = excellent, 1 = not likely to 5 = most likely.

2.3. Statistical analysis

Categorical data were summarised as the frequency with percentages. Continuous data were summarised as mean ± SE (standard error of the mean). Pretest and posttraining marks were compared (intragroup comparison) by repeated-measures two-way analysis of variance. For intergroup comparison of mean marks, one-way analysis of variance was used. For pairwise comparison of means, the Bonferroni post hoc test was used. A two-tailed ($\alpha = 2$) $p < 0.05$ was considered statistically significant. Analysis was performed on IBM SPSS Statistics for Windows, version 23.0 (IBM Corp: Armonk, NY).

3. Results

A total of 302 doctors were enrolled for the "1-day" training during the specified period. The mean (standard deviation) age of the doctors was 31.7 (5.3) years. The majority of the participants were males (65.3%). Faculty members, senior residents (SRs), and junior residents (JRs) were 29 (9.6%), 98 (32.3%), and 175 (57.8%) respectively. Out of those, one did not give the pretest and 21 did not give the posttest and were excluded. A total of 28 participants who did not complete the forms were also excluded. The final analysis included 252 nonintensivist doctors. Participants from clinical medicine speciality were 215 (85.3%), and the rest were from clinical surgery. Almost half of the participants (n = 120, 47.6%), had 1–6 months of ICU experience, and participants with 0–1 month and >6 months of experience were 66 (26.2%) each.

3.1. Pretraining and posttraining marks of all participants

There was a significant improvement in the mean total score of the participants after training from 14/25 to 19/25, with a mean difference (MD) of 5.02 ($p < 0.001$). Likewise, in every domain, there was a significant increase in mean scores after training, with the highest in the AMV domain with an MD of 2.38 ($p < 0.001$), followed by the GICR domain with an MD of 2.18 ($p < 0.001$), ABG and monitoring domain with an MD of 0.28 (<0.001), and least

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Table 2
Mean (SD) pretraining and posttraining score of all participants (n = 252).

Domain	Max score	Pretraining score	Posttraining score	Change (post−pre)	p-value
Total score	25	14.0 (3.5)	19.0 (3.9)	5.02	<0.001
COVID-19	4	3.0 (0.8)	3.2 (0.8)	0.14	0.04
Airway & MV	10	4.5 (1.8)	6.9 (1.9)	2.38	<0.001
ABG & monitoring	4	2.9 (1.1)	3.2 (1.0)	0.28	<0.001
General ICU care & resuscitation	7	3.5 (1.5)	5.6 (1.4)	2.18	<0.001

ABG, arterial blood gas; ICU, intensive care unit; MV, mechanical ventilation; SD, standard deviation.

increase in the domain of COVID-19 with an MD of 0.14 ($p = 0.04$) (Table 2).

3.2. Posttraining increase in knowledge of the participants by duration of prior ICU experience

In groups I, II, and III, there was a significant improvement in the total score of the participants after training, with MD with 95% confidence interval (CI) limits of 5.27 (4.65–5.90), 4.70 (4.38–5.02), and 5.33 (4.89–5.78), respectively (Table 3).

There was a significant difference ($p < 0.001$) in mean pretraining scores, represented as mean (SD) across three groups, with the lowest score in group I: 12 [2.9], followed by other groups II and III with equal scores: 14.7 [3.4]. Likewise, the posttest score was significantly different across the three groups ($p < 0.001$) (Supplementary Table 1). The change in posttest scores was not statistically different across the three groups based on ICU experience (Fig. 1A).

3.3. Posttraining increase in knowledge score of the participants by speciality

In the clinical surgery group (n = 37), there was a significant improvement in the total score after training from 11/25 to 16.4/25 with an MD (95% CI limits) of 5.38 (4.4–6.3). Similarly, in the clinical medicine group (n = 215), the MD (95% CI limits) score after training was 4.95 (4.71–5.20), from 14.5/25 to 19.5/25 (Table 4 and Fig. 1B).

3.4. Subjective assessment of the training by participants

In all three groups, more than half of the participants had opined “very good” response to topic selection (Group I: 54.5%, Group II: 52.5%, and Group III: 60.6%). “Good” response to knowledge increase was the most common response with the highest proportion in Group II (56.7%). Further, a “very good” response to satisfaction with training was opined by Group II (50.0%) and Group III (50.0%), followed by Group I (39.4%). Confidence in managing ICU (as opined as “yes” and “definitely yes”) was with the highest proportion in Group III (74.2%), followed by group II (71.7%) and group I (54.6%). Response to joining ICU was seen with the highest proportion in Group III (43.9%), followed by Group II (36.7%) and Group I (25.8%) (Supplementary Table 2).

3.4.1. Assessment of feedback

A total of 96 participants provided feedback. The crucial suggestions were to spread the training into 2–3 days (60%), conduct training regularly (52%), repeat training a week before the team's next ICU posting (40%), allot more time for hands-on training (70%), discuss on ventilatory management of other cases, apart from ARDS (20%), express technical terms in the more lucid language (10%), and integrate various lectures like the change of ventilatory settings based on ABG findings (5%).

4. Discussion

The study revealed that training nonintensivist doctors for 1 day through a structured program leads to significant improvement in knowledge, regardless of their prior ICU experience and speciality.

The strengths of the study are the study was the first of its kind, highlighting the impact of 1-day ICU training on the knowledge of nonintensivist doctors at a tertiary care medical university in a low-middle-income country. Additionally, this study adds to the existing literature that such short-term training even for “1 day” can generate a trainable workforce for ICUs, irrespective of their previous experience or specialties. The limitations of the study are that the study was done at a single centre and prior lack of structural validity of questions using discrimination indices. The other limitations are a primarily didactic course with limited interactive/simulation/problem-based discussions/small group-based activities. Also, there was no delayed posttest to check knowledge retention (sustained gains), and lack of feedback after completing the ICU posting.[25] Delayed posttest to check for knowledge retention could not be done due to the pandemic's peak during that time with high infection rates during or after COVID-19 ICU posting. The participants who finished the posting were immediately recruited back to their respective departmental works due to staff shortage. The ICU experience was not categorised in terms of the type of ICU

Table 3
Posttraining increase in the knowledge score of the participants by duration of experience.

Domain	Max score	Group I (n = 66)			Group II (n = 120)			Group III (n = 66)		
		Pretraining marks	Posttraining marks	Change (post − pre) with 95% CI	Pretraining marks	Posttraining marks	Change (post − pre) with 95% CI	Pretraining marks	Posttraining marks	Change (post − pre) with 95% CI
Total score	25	12.0 (2.9)	17.2 (4.5)	5.27 (4.65–5.90)	14.7 (3.4)	19.4 (3.2)	4.70 (4.38–5.02)	14.7 (3.3)	20.0 (3.7)	5.33 (4.89–5.78)
COVID-19	4	3.1 (0.8)	3.0 (0.8)	−0.05 (−0.33–0.24)	3.0 (0.8)	3.2 (0.8)	0.23 (0.05–0.40)	3.1 (1.0)	3.3 (0.8)	0.18 (−0.12–0.48)
Airway & MV	10	3.7 (1.6)	6.1 (2.1)	2.41 (2.01–2.81)	4.8 (1.7)	7.1 (1.7)	2.35 (2.07–2.63)	5.0 (1.8)	7.4 (1.8)	2.42 (2.02–2.81)
ABG & monitoring	4	2.3 (1.2)	2.9 (1.3)	0.55 (0.24–0.86)	3.2 (1.0)	3.3 (0.8)	0.09 (−0.11–0.29)	3.0 (1.0)	3.4 (0.9)	0.36 (0.09–0.64)
General ICU care & resuscitation	7	2.8 (1.5)	5.2 (1.5)	2.36 (1.93–2.80)	3.8 (1.5)	5.8 (1.4)	1.98 (1.71–2.25)	3.5 (1.5)	5.8 (1.3)	2.33 (1.97–2.70)

ABG, arterial blood gas; CI, confidence interval; ICU, intensive care unit; MV, mechanical ventilation.

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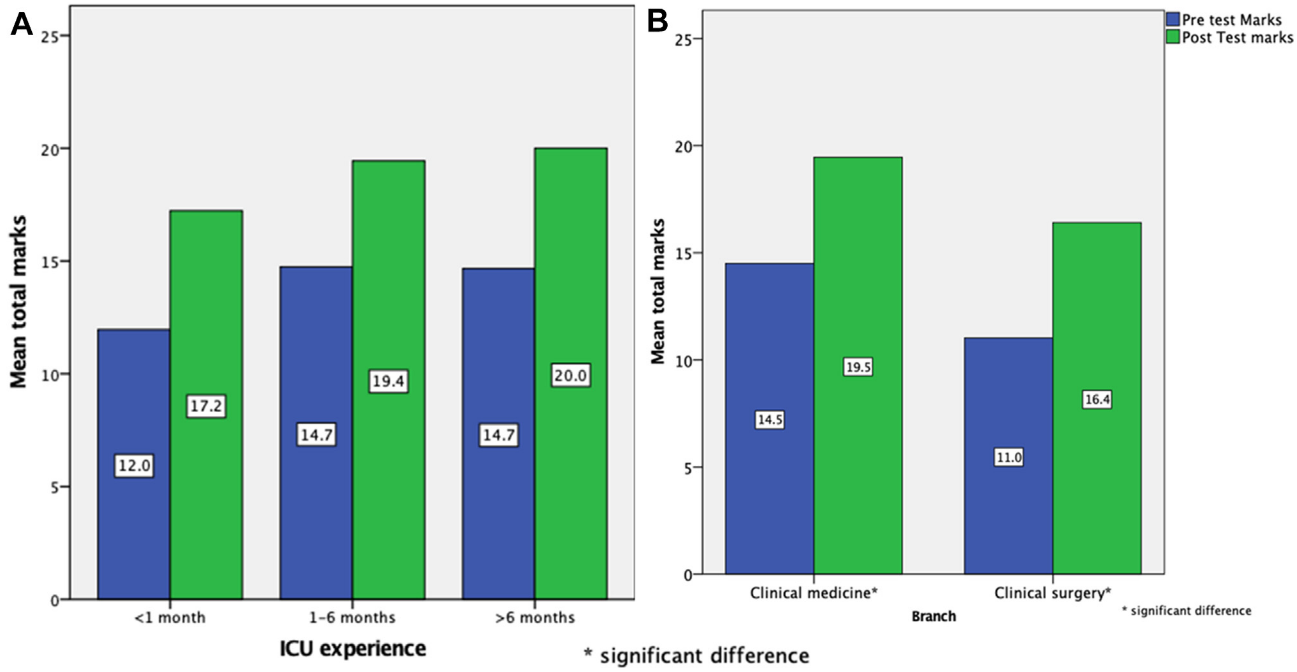

Fig 1. (A) Increase in the knowledge score of the participants by ICU experience. (B) Increase in the knowledge score of the participants by broad specialty. ICU, intensive care unit.

(tertiary care/academic ICUs) and the type of experience (academic experience or nonacademic working experience), and also the recency of ICU experience was not considered.

During the pandemic, a deluge of COVID-19 cases caused severe scarcity of trained workforce, and many nonintensivists were trained to handle ICUs worldwide.[26] Various articles like "Why ventilators alone are not an answer" without a trained workforce have highlighted the fact.[15] Studies done during the pandemic focused on training doctors with no prior ICU qualification (nonintensivists) for "1 day" in various domains revealed that such courses can be of definite impact in addressing the issue of scarcity of trained workforce.[17,21]

Our study reiterated the observations of previous studies that even the participants with no prior ICU experience (Group I) performed equally well as others, with similar gain in knowledge even though their baseline scores in the pretest were on the lower side.[17] This could be due to their lower necessity to practise them in their current residency program and recapitulation of clinical and practical skills from their respective internships after the 1-day teaching program. It signifies the importance of periodic ICU training to refresh residents' knowledge, which would help augment the workforce in surge situations.

Our observations were similar to the result of a focused 1-day course done by Engberg et al. in training nonintensivist doctors effectively.[17] This can be noticed even in the feedback response of our study, where more than 50% in the Group I reported (subjectively) confidence in managing ICUs. To our surprise, overall, the clinical surgery specialty outperformed clinical medicine, especially in domains like GICR. The possible explanation may be more interest in learning ICU-related management, which they lack in their regular training. However, the number of clinical surgery participants was lower. A recent questionnaire-based study during the pandemic times on redeployment of surgical trainees (postgraduates) in ICU has observed an increase in trainees' confidence after acquiring clinical skills of managing patients on invasive and noninvasive ventilation, dialysis, and circulatory failure. The study also found that 97% of the participants believed that the experience gained would benefit their future careers.[27] The current training of surgical residents is such that they can act as a "hybrid of CCM physician and surgical interventionist", providing acute critical care services as analysed in the study by Pottenger ,et al.[28] Inferring this, a powerful and multifaceted team may be created by training all the specialties together, for a multipronged approach, which is the need of the hour.[29]

Table 4
Posttraining increase in knowledge score of the participants by broad specialty.

Domain	Max score	CM (n = 215)			CS (n = 37)		
		Pretraining marks	Posttraining marks	Change (post − pre) with 95% CI	Pretraining marks	Posttraining marks	Change (post − pre) with 95% CI
Total score	25	14.5 (3.3)	19.5 (3.5)	4.95 (4.71–5.20)	11.0 (3.0)	16.4 (4.8)	5.38 (4.4–6.3)
COVID-19	4	3.1 (0.8)	3.2 (0.8)	0.15 (0.01–0.30)	3.0 (0.8)	3.1 (0.7)	0.11 (−0.22–0.44)
Airway & MV	10	4.7 (1.7)	7.1 (1.7)	2.42 (2.21–2.63)	3.5 (1.6)	5.7 (2.0)	2.16 (1.61–2.72)
ABG & monitoring	4	3.1 (1.0)	3.3 (0.9)	0.27 (0.13–0.42)	2.2 (1.2)	2.5 (1.3)	0.32 (−0.16–0.81)
General ICU care & resuscitation	7	3.7 (1.5)	5.7 (1.4)	2.07 (1.86–2.27)	2.3 (1.3)	5.1 (1.6)	2.81 (2.28–3.34)

ABG, arterial blood gas; CI, confidence interval; CM, clinical medicine; CS, clinical surgery; ICU, intensive care unit; MV, mechanical ventilation.

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We accept that "1-day" training might not be sufficient and would be too compact in acquiring knowledge/skill and confidence, as opined in the feedback given to increase the course duration to 2–3 days. However, the increasing number of cases during that period and lack of time for both the trainers and trainees precluded extension of duration of the course. Even single-day training, if focused and implemented correctly, may cause significant improvement in knowledge as reported in different studies.[20] Anonymous online surveys from Australian critical care nurses expressed sufficient preparedness for managing COVID-19 but simultaneously exhibited fear concerning insufficient or lack of appropriate personal protective equipment. Such studies further enhance the necessity of preparedness and response, which are critical for effectively managing pandemics.[30] In another report, 1-day course for nurses significantly improved their knowledge, skills, and resilience to support their emotional well-being and professional quality of life during their work in COVID-19 ICUs.[18] In the COVID-19 pandemic, further rapid courses with a "3-h curriculum" were designed and successfully implemented for training several hundreds of noncritical care staff nurses in New York State.[19] Such 1-day workshops may help reduce the burnout caused by working in a challenging environment of COVID-19 ICUs.[19] Even medical students, including interns and above the fourth-year undergraduation students, could be trained for one day so that their preparedness, knowledge, and skills could be used as a "workforce" in pandemics.[31,32] There has been much change in critical care after the COVID-19 pandemic. The changes included ICU organisation and care processes, of which "just-in-time training" for non-ICU clinicians, expanding staffing with medical students, residents, and fellows of various specialities, with repeated short-term courses became the utmost necessity to handle future pandemics like COVID-19, as mentioned in a recent survey by Vranas et al.[33,34]

A short "crash-course" as presented here may be helpful as a first step during pandemic/epidemic preparations, particularly in resource-limited settings. However, more comprehensive strategies like simulation and regular reinforcement of critical care basics should also be performed and evaluated.[35] Such frequently done crash courses can be of immense help in nonpandemic contexts like training paramedics and healthcare workers in handling medical emergencies, viz railway accidents, vehicular motor accidents, climate disasters (like hurricanes, earthquakes), building collapses or methanol poisoning, and rapid training for other humanitarian disasters, especially in underserved areas of low-middle-income countries. Relevance of such 1-day training could be further highlighted by the development of disaster management exercises initiated after the 9/11 terrorist attacks in New York. The course was standardised through years to incorporate into the first-year curriculum of medical students, which received high praise and tremendous interest apart from laying a solid foundation in emergency medicine in the early part of their career.[36] Utility of such training can be enhanced by focussing on issues of knowledge retention, frequent revisions (periodic training), using standardised study material, electronic communications, and standardisation of training with components of hands-on and skill honing through experts ensuring uniformity along with delayed assessment for retention of knowledge.[35]

5. Conclusion

The study focused on training nonintensivist doctors for 1 day through a structured program. It revealed that such courses could help improve the knowledge of nonintensivist doctors regardless of their prior ICU experience and speciality. Healthcare workers enrolled in short-term training courses can strengthen the existing workforce, especially in pandemics like COVID-19.

Conflict of interest

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Credit authorship contribution statement

SSS: Conceptualisation; Data curation; Formal analysis; Investigation; Methodology; Project administration; Writing - original draft.

AA: Conceptualisation; Data curation; Formal analysis; Investigation; Methodology; Project administration, Writing - original draft, Supervision.

SS: Drafting the manuscript to the intellectual content.

SuSa, SA, SNM, SM, AL, NR: Data curation; Formal analysis; Writing - review & Editing.

All authors contributed equally and approved the final version of the manuscript.

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Appendix A. Supplementary data

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