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RESEARCH ARTICLE

A pilot study on assessing the gap between nurses' task performances and knowledge pertaining the same with reference to " I COUGH" initiative- a call for promoting patient 'care bundle' assignments in low-income nations [version 1; peer review: 1 approved, 2 approved with reservations, 1 not approved]

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Abstract

Background: The health sector in low-income nations has been crippled owing to low resources, lack of trained staff and a scarcity of effective health-related reforms. Amidst such a scenario, implementation of patient-centered care bundle approaches could help reprise the autonomy and standards of care for healthcare providers as well as safeguard patient safety.

Methods: We sought to determine the gap between task performance and the underlying knowledge pertaining the same among nurses from intensive and high dependency neurosurgical units within three hospitals in Nepal through a questionnaire-based approach focusing on task assignments to prevent pulmonary complications among their patients and scoring them with references to the variables of 'I COUGH', a similar patient care bundle initiative.

Results: There is a gross discrepancy between the patterns of task performance and the knowledge regarding the rationale behind the same tasks among nurses working in critical care neurosurgical units. In reference to I COUGH, nurses had below 50% knowledge on interventions aimed to prevent pulmonary complications among their patients, irrespective of the level of experience attained in the units. Furthermore, none of them had complete knowledge regarding all components of effective chest physiotherapy.

Conclusion: There is the utmost need for the implementation of patient-focused care bundle approaches in upraising the health delivery standards, especially in low-income nations. Such initiatives can promote autonomy amongst healthcare professionals on patient care as well as assuring better patient outcomes by minimizing complications.

Open Peer Review

Reviewer Status ✗ ✓ ? ?

	Invited Reviewers			
	1	**2**	**3**	**4**
version 1 23 Apr 2019	✗ report	✓ report	? report	? report

1 **Enrique Castro-Sánchez** [iD], Imperial College London, London, UK

2 **Dibya Sharma**, Manipal College of Medical Sciences, Pokhara, Nepal

3 **Valarmathi Selvaraj** [iD], Gulf Medical University, Ajman, United Arab Emirates

4 **Nirmala Pradhan**, B.P. Koirala Institute of Health Sciences, Dharan, Nepal

Any reports and responses or comments on the article can be found at the end of the article.

Keywords

Knowledge, task performance, care bundle

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Author roles: Munakomi S: Conceptualization, Data Curation, Formal Analysis, Methodology, Supervision, Validation, Writing – Original Draft Preparation; **Shrestha S**: Data Curation, Formal Analysis, Project Administration, Writing – Review & Editing; **Luitel A**: Conceptualization, Data Curation, Investigation, Methodology, Validation

Introduction

Among surgical specialties worldwide, there is alarmingly high incidence of post-operative pulmonary complications, being reported as high as 40%, and leading to 30 days post-surgery mortality for almost 20%[1]. These complications also lead to an increase in average hospital stay by 8 days and thereby increase in average hospital costs by almost 55%[1] Therefore, there is a substantial need to produce a care bundle based on an enhanced recovery protocol within these surgical specialties[1].

In context of low-income nations like Nepal, with a per capita income of below US $700, the current health sector situation is even more alarming. The limited resources available coupled with political turmoil further exacerbates the issue[2]. It reportedly has only 16.7 intensive care unit (ICU) beds per million of its population[3]. Even in the capital city, only 7.2 ICU beds equipped to provide backup ventilation are available per 100,000 of the population. Moreover, there is a significant shortage of effective manpower, with a nurse patient ratio of >1:4 during night shifts[4]. The present nurse to population ratio in Nepal is approximately 11 nurses per 10,000 of the population (with 50 considered to be optimum)[5]. Recruitment of nurses is low in national hospitals with many opting to go abroad owing to higher salaries, improved facilities and relatively better scope for career building opportunity. This accounts for the temporary employment pattern prevalent in our hospitals; with one study showing up to 50 nurses leaving their hospital within a single calendar year. Moreover, lack of in-service education and timely reforms of the existing nursing guidelines have further affected the nursing profession[5].

The I COUGH program is a postoperative pulmonary care bundle approach aimed at reducing the incidence of postoperative pneumonia and unplanned intubation among patients[6]. This acronym incorporates six variables namely 1) Incentive spirometry, 2) Cough/ chest physiotherapy, 3) Oral care, 4) Understanding, 5) Get out of bed and 6) Head end elevation[6].

Such initiative not only helped promote patient's health but also in improving performance standards and thereby their autonomy[1]. Therefore, currently upmost emphasis is being given for promoting such performance appraisal methods[1]. There is upmost need for bridging the gap between nurses' performance and knowledge of the underlying reasons for the tasks they perform through the application of care bundle approaches such as the I COUGH initiative[6].

We performed a pilot study to identify significant discrepancy between the knowledge of and performance of relevant tasks among health care providers in the critical care setting up in regards to the I COUGH initiative, and thereby call for initiation of care bundle approaches in our context as well.

Methods
Subjects

A questionnaire based observational analytical study was carried out aiming for maximum inclusion of all nurses practicing in the intensive care and the high dependency neurosurgical units from three major teaching hospitals of Kathmandu University namely 1) Nobel Medical College, Biratnagar 2) College of Medical Sciences, Chitwan and 3) National Institute of Neurosurgery and Allied Health Sciences, Kathmandu were enrolled for our study. We initially confirmed the practice of inclusions of all the variables listed within the I COUGH initiative among the daily assigned nursing task assignments in all these three hospitals. We then opted to determine the level of discrepancy between their patterns of work performance with the underlying knowledge governing the same. The authors requested the management team of each institution to make provisions for maximum attendance of their nurses from their intensive and the high dependency care units in our short educational programme. Prior to beginning the educational course, the authors asked all of the participating 101 nurses to list in numerical order major components of their daily tasks aimed at reducing the risk of pulmonary complications among their patients. They were also advised to tabulate different components of effective chest physiotherapy. Their answers were recorded by a researcher, marked, tabulated and scored out of a total score of six with one score allocated for each of the six variables within the already validated I COUGH protocol. In order to reduce possible bias from early knowledge of the test, the authors performed the test in a single group session the same day of obtaining permission from the respective hospital administrations. The answer session was followed by a short educational class conducted by the researchers describing the importance of application of patient care bundle approach measures such as I COUGH in safeguarding their patients' lives.

Data acquisition and analysis

The acquisition of data was done for score of each of the six variables of I COUGH program for each of the participating 101 nurses from the three hospitals. The results were analyzed and tabulated with the help of Windows Excel version 2007 for our result analysis. Frequency analysis was performed on data gathered from nurses.

Ethical considerations

The study was approved by the Institutional Review Committee (IRC) of Nobel Medical College and Teaching Hospital (NMCTH) (approval number 259/2019). Permission for conducting the research was obtained from each of the hospitals that were included in the study.

Results

A total of 101 nurses working in the intensive care and high dependency neurosurgical units were enrolled for our study within three different teaching hospitals under Kathmandu University. The average scores obtained by the nurses from three hospitals were below 50% scores (37.83%, 40.83% and 42.33% respectively) in terms of their knowledge while comparing to the I COUGH strategy items (Figure 1). The average scores of the nurses were 2.27, 2.45 and 2.54 for CMS, NINAS and NMCTH respectively.

In terms of individual variables of I COUGH, Cough and Head end elevations were mentioned by most number of nurses whereas Oral hygiene and Understanding aspects were mentioned by the least number of nurses (Figure 2).
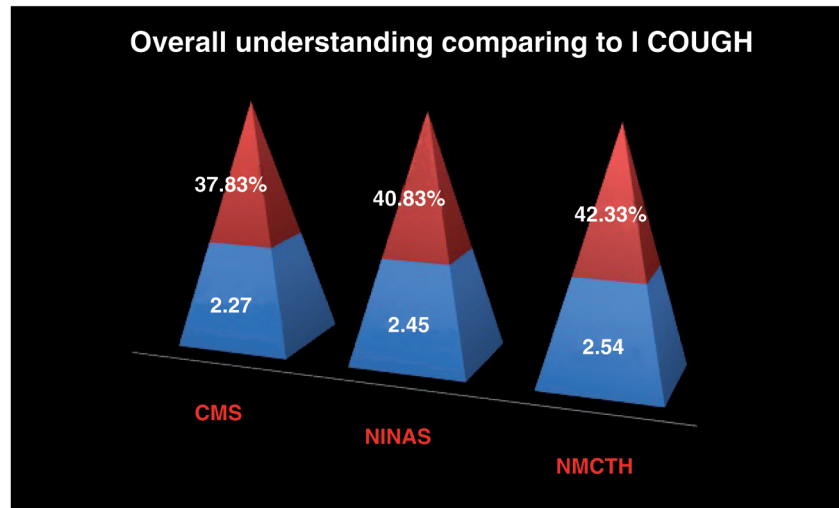
Figure 1. Overall understanding comparing to I COUGH among nurses of different hospitals. NMCTH - Nobel Medical College and Teaching Hospital, CMS - College of Medical Sciences, Chitwan, NINAS - National Institute of Neurosurgery and Allied Health Sciences.
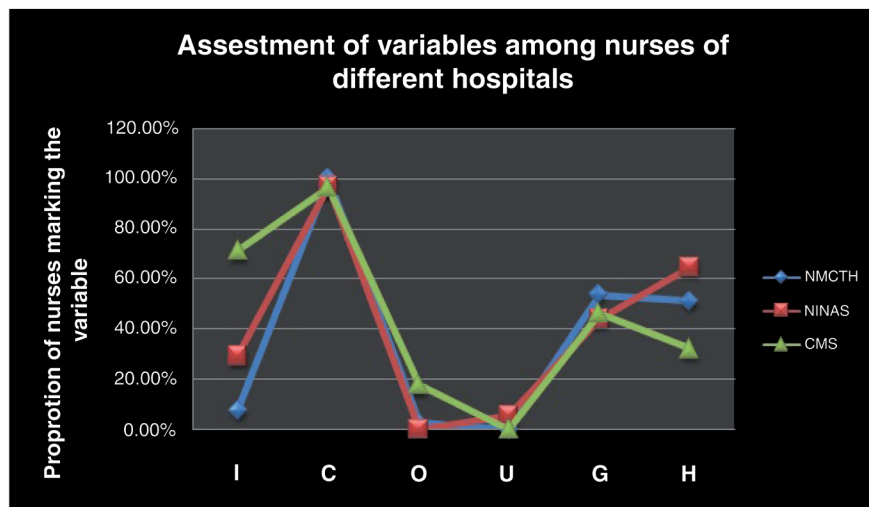
Figure 2. Assessment pertaining to different variables of I COUGH among nurses from all three hospitals. NMCTH - Nobel Medical College and Teaching Hospital, CMS - College of Medical Sciences, Chitwan, NINAS - National Institute of Neurosurgery and Allied Health Sciences.

Cough was mentioned the most (96.42%, 97% and 100% respectively) whereas oral hygiene was mentioned the least (Figure 3 and Figure 4).

In terms of individual variables, Incentive spirometry was mentioned by most nurses from College of Medical Sciences whereas Cough was mentioned the highest from nurses of Nobel Medical College and National institute of Neurosurgery and Allied Sciences institutions (Figure 5).

Despite naming Cough correctly by most nurses from all three institutions, paradoxically none of the nurses correctly mentioned of all the essential components of Chest physiotherapy.

Discussion

VAP in associated in 9–27% of all mechanically ventilated patients[7]. One study showed incidence of 25 VAPs per 100 ventilated patients, thereby protracting ICU stays and increasing the risk of mortality among them[8]. The provision of dedicated physiotherapists in critical care is still in its infancy in our context[9].

Nurses play pivotal role by standing in the frontline of the health surveillance systems and thereby are supposed to detect, make inferences and then implement the correct course of action during any adverse events in the ICU set up. This is undermined however, by the lack of trained staff. Moreover, there are frequent interruptions during in their assigned work schedule owing to
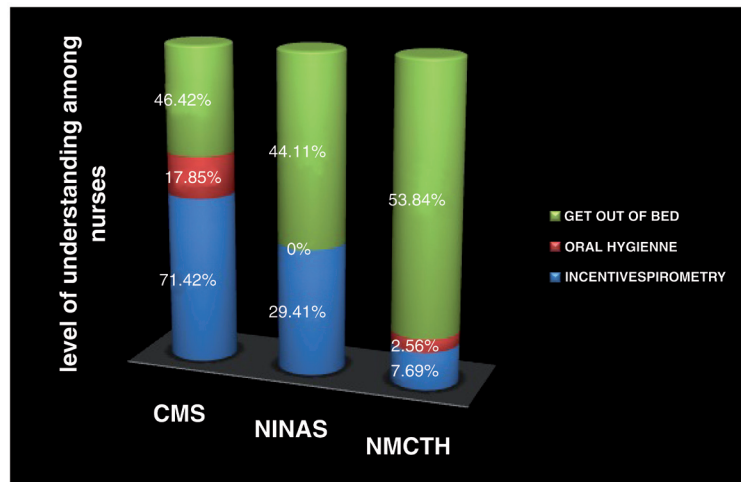
Figure 3. Level of understanding of individual variables within I COUGH. NMCTH - Nobel Medical College and Teaching Hospital, CMS - College of Medical Sciences, Chitwan, NINAS - National Institute of Neurosurgery and Allied Health Sciences.
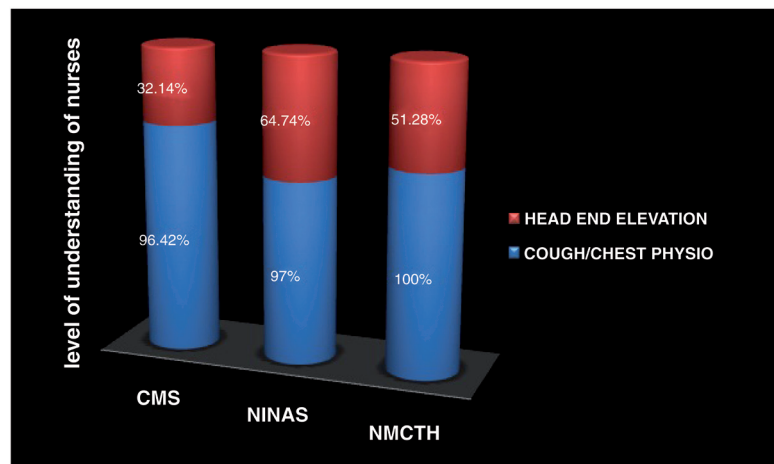
Figure 4. Level of understanding of individual variables within I COUGH. NMCTH - Nobel Medical College and Teaching Hospital, CMS - College of Medical Sciences, Chitwan, NINAS - National Institute of Neurosurgery and Allied Health Sciences.
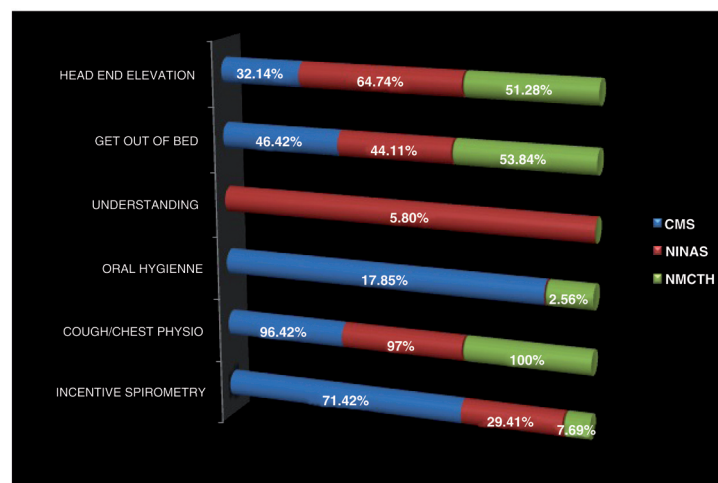
Figure 5. Assessment of all variables among nurses of all three hospitals. NMCTH - Nobel Medical College and Teaching Hospital, CMS - College of Medical Sciences, Chitwan, NINAS - National Institute of Neurosurgery and Allied Health Sciences.

factors such as unplanned emergency procedures, assisting for critical events, disjointed and missing medical supply etc. This increases the risks of some omissions in their care delivery amidst such stacking of cognitive and physical loads. However, merely increasing the number of nurses in a patient care unit may not be a panacea if the environment in which they work is not conducive to clinical decision making. There should be task organization skill simulations to improve their ability to manage such high cognitive managerial tasks[10].

The importance of effective clinical leadership in ensuring safe and efficient care has been reiterated time and again. Nurses need to gain autonomy over their own practicing behavior in order to improve their patients' clinical outcome[11]. Effective model study should be framed to upraise the standards of such pivotal role playing the front-line staffs[12,13]. Future shortages of nurses may be unpreventable, but making provisions for effective interdisciplinary teamwork, coupled with pivotal approaches for determining quality insurance and promoting safe environments for patients, could help mitigate their harmful impacts[14].

A similar study carried out to assess the knowledge of nurses regarding chest physiotherapy found that though they had good results in their clinical performances, with regards to clinical knowledge encompassing the same, they ironically performed poor[15]. Almost 67% of them were not aware about indication of postural drainage while 76% were not aware about definition of percussion and vibration[15]. Similar discrepancy with regards to task performance and the knowledge regarding underlying rationales for the same have been seen in our study as well. Our study also revealed that despite understanding that chest physiotherapy is an essential strategy to minimizing pulmonary complications, none of the nurses were able to correctly outline different components of the same namely positioning, percussion, vibration, squeezing and finally suctioning[16,17].

Amidst the scenario of having an extreme shortage of effective manpower in the health sector on the one hand and the prevalence of huge discrepancy between knowledge of the tasks being performed among the healthcare practitioners on the other; the application of care bundle approaches could promote the notion of "effective tasking through minimal manpower". This can help improve the standards of the health care providers as well as safeguard patient's health and safety.

There are certain limitations to our study. Foremost being inclusion of nurses from Neurosurgical units of only three teaching hospitals of our country. One of the prevailing limiting

factors in carrying out such observational study is the risk of coherent bias in the results due prior knowledge of such study among the probable study groups from their peers who already participated in the study. However, the results can further be validated through its multicentric application throughout national and international hospitals with inclusions of nurses from other surgical subspecialties as well as those practicing in the general incentive care units. There is also pivotal need in assessing the effect of such patient focused care bundle approaches in minimizing complications among the patients following its application. The fundamental rational of this study is to promote inclusions of patient care bundle approaches in managing patients to safeguard our patients' health.

Conclusion
The initiation of patient focused care bundle approaches is imperative to improving health delivery standards especially in low income nations. Such initiatives can promote health care provider autonomy on patient care, as well as assure better patient outcomes by minimizing complications.

Data availability
Underlying data
Open Science Framework: I COUGH PROJECT. https://doi.org/10.17605/OSF.IO/4U8C7[18]

This project contains the following underlying data:

- I COUGH DATA F1000.xlsx (Nurses scores for I COUGH and chest physiotherapy awareness)

Extended data
Open Science Framework: I COUGH PROJECT. https://doi.org/10.17605/OSF.IO/4U8C7[18]

This project contains the following extended data:

- QUESTIONNAIRE.docx (Study questionnaire)

Data are available under the terms of the Creative Commons Zero "No rights reserved" data waiver (CC0 1.0 Public domain dedication).

References

1. Griffiths SV, Conway DH, POPC-CB Investigators, *et al.*: **What are the optimum components in a care bundle aimed at reducing post-operative pulmonary complications in high-risk patients?** *Perioper Med (Lond).* 2018; **7**: 7.
PubMed Abstract | Publisher Full Text | Free Full Text

2. Acharya SP: **Critical care medicine in Nepal: where are we?** *Int Health.* 2013;

5(2): 92–5.
PubMed Abstract | Publisher Full Text

3. Murthy S, Leligdowicz A, Adhikari NK: **Intensive care unit capacity in low-income countries: a systematic review.** *PLoS One.* 2015; **10**(1): e0116949.
PubMed Abstract | Publisher Full Text | Free Full Text

4. Shrestha RR, Vaidya PR, Bajracharya GR: **A survey of adult intensive care units in Kathmandu Valley.** *Postgraduate Med J Nat Acad Med Sci.* 2011; **11**(2): 1–7.
    Reference Source

5. Paudel K: **Report on status of nurses in Nepal.** Nepal Health Research Council, 2010; 123456789.
    Reference Source

6. Cassidy MR, Rosenkranz P, McCabe K, *et al.*: **I COUGH: reducing postoperative pulmonary complications with a multidisciplinary patient care program.** *JAMA Surg.* 2013; **148**(8): 740–745.
    PubMed Abstract | **Publisher Full Text**

7. Kalanuria AA, Ziai W, Mirski M: **Ventilator-associated pneumonia in the ICU.** *Crit Care.* 2014; **18**(2): 208.
    PubMed Abstract | **Publisher Full Text** | **Free Full Text**

8. Mishra DR, Shah N, Shah DS: **Incidence and Outcome of Ventilator Associated Pneumonia in ICU of a Tertiary Care Hospital in Nepal.** *JNMA J Nepal Med Assoc.* 2017; **56**(207): 304–8.
    PubMed Abstract | **Publisher Full Text**

9. Baidya S, Acharya RS, Coppieters MW: **Physiotherapy practice patterns in Intensive Care Units of Nepal: A multicenter survey.** *Indian J Crit Care Med.* 2016; **20**(2): 84–90.
    PubMed Abstract | **Publisher Full Text** | **Free Full Text**

10. Potter P, Wolf L, Boxerman S, *et al.*: **An Analysis of Nurses' Cognitive Work: A New Perspective for Understanding Medical Errors.** In: Henriksen K, Battles JB, Marks ES, *et al.* editors. *Advances in Patient Safety: From Research to Implementation.* (Research Findings). Rockville (MD): Agency for Healthcare Research and Quality (US); 2005; **1**.
    PubMed Abstract

11. Kieft RA, de Brouwer BB, Francke AL, *et al.*: **How nurses and their work environment affect patient experiences of the quality of care: a qualitative study.** *BMC Health Serv Res.* 2014; **14**: 249.
    PubMed Abstract | **Publisher Full Text** | **Free Full Text**

12. Needleman J, Hassmiller S: **The role of nurses in improving hospital quality and efficiency: real-world results.** *Health Aff (Millwood).* 2009; **28**(4): w625–33.
    PubMed Abstract | **Publisher Full Text**

13. Clarke SP, Donaldson NE: **Nurse Staffing and Patient Care Quality and Safety.** In: Hughes RG, editor. *Patient Safety and Quality: An Evidence-Based Handbook for Nurses.* Rockville, MD: Agency for Healthcare Research and Quality; 2008.
    PubMed Abstract

14. Buerhaus PI, Donelan K, Ulrich BT, *et al.*: **Impact of the nurse shortage on hospital patient care: comparative perspectives.** *Health Aff (Millwood).* 2007; **26**(3): 853–862.
    PubMed Abstract | **Publisher Full Text**

15. Kheder M: **Assessment of Nurses Knowledge & Practice Regarding Chest Physiotherapy in Elmek Nimer University Hospital.** master degree in medical surgical nursing. shendi university, faculty of post graduate studies and scientific research 2016; 28–30.
    Reference Source

16. Van der Schans CP: **Conventional chest physical therapy for obstructive lung disease.** *Respir Care.* 2007; **52**(9): 1198–206; discussion 1206–9.
    PubMed Abstract

17. Ciesla ND: **Chest physical therapy for patients in the intensive care unit.** *Phys Ther.* 1996; **76**(6): 609–625.
    PubMed Abstract | **Publisher Full Text**

18. Munakomi S: **I COUGH PROJECT.** 2019.
    http://www.doi.org/10.17605/OSF.IO/4U8C7

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Current Peer Review Status: ✗ ✓ ? ?

Version 1

Reviewer Report 13 July 2020

? **Nirmala Pradhan**

Department of Psychiatric Nursing, B.P. Koirala Institute of Health Sciences, Dharan, Nepal

1. Abstract: It is ok, but the result is focused only on knowledge.

2. Methodology:
   - How was the sample size (101) calculated? On what basis?
   - Since the population of this study is Nurses, you need to define it.
   - Did the nurses selected in all three settings have similar experience and educational level?
   - Brief description of the knowledge questionnaire must be mentioned. How it was interpreted? Need to mentioned the reliability of the tool.

3. Result:
   - Socio-demographic profile is not highlighted. Add on this.
   - Figure 1 there is no index. Its not understandable [Color code used].
   - If you have observed the Nurse's task performance, nowhere its mentioned. It will be nice to include this aspect as your study is looking for practice gap. You can include like frequency of observation while caring the post-operative patients. Was it a participatory or non- participatory observation? How did you over-come the biases?
   - Statistical analysis was extremely basic. Only descriptive analysis was used. You could have used inferential statistical analysis consulting the statistician.

4. Ethical consideration: How did you maintain the confidentiality and privacy of the nurses at the time of data collection?

5. In your title you've mentioned that there is a gap in Practice and also mentioned to find the gap. I see that your second objective is un-answered. Please include it.

Is the work clearly and accurately presented and does it cite the current literature?
Yes

Is the study design appropriate and is the work technically sound?

Partly

Are sufficient details of methods and analysis provided to allow replication by others?
No

If applicable, is the statistical analysis and its interpretation appropriate?
No

Are all the source data underlying the results available to ensure full reproducibility?
Yes

Are the conclusions drawn adequately supported by the results?
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Psychiatric and Psychiatric Nursing

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 03 July 2020

https://doi.org/10.5256/f1000research.20615.r65133

? **Valarmathi Selvaraj** (iD)
Gulf Medical University, Ajman, United Arab Emirates

Thanks for the opportunity to review the articles titled 'A pilot study on assessing the gap between nurses' task performances and knowledge pertaining the same with reference to "I COUGH" initiative- a call for promoting patient 'care bundle' assignments in low-income nations'. The concept behind this research is novel and impressive for me.

Introduction:
- There should be more info related to the background aspects of this research.
- The authors need to mention the pulmonary complication occurring after the surgery.
- Here the authors need to cite the articles related to 'I COUGH' programme.
- The authors need to explain about Care bundle approach method.

Methodology:
- The I COUGH protocol has to be mentioned in detail mentioning all the six components to enable readers other than nurses to understand and interpret.

- The study design needs to be explained under this section. What do the authors mean by 'Analytical study?'. It needs explanation.
- The authors have mentioned 101 nurses were advised to tabulate different components of effective chest physiotherapy. The authors mentioned only about 'C' and the remaining other five components such as 'Oral care', 'Understanding', 'Get out of bed' and 'Head end elevation'.
- The methodology should be written in detail mentioning duration of study, how many samples the authors have collected in a day, and details on the short educational activity.
- Overall, it will be nice to divide the methodology into subsections to improve understanding.

Results:
- In the results part the authors have mentioned clearly about nurses knowledge but the authors never mention the knowledge of nurses in the methodology. This needs rewriting.
- Figure 3 and Figure 4 have the same headings and need to be modified.
- The authors need to perform inferential statistics with the results.
- In the results the authors have mentioned about level of understanding but in the discussion, in a few places the authors have mentioned 'knowledge'. It is confusing and hence needs to be rewritten.

Discussion:
- In the first paragraph the authors did not mention what VAP is. This needs expansion and a probable explanation.
- The 'task organization skill simulations' need more elaborations.

Conclusion:
- I would suggest the authors to mention about how to improve the health care standard. Conclusion should be written based on the objective. Hence it can be rewritten.

Is the work clearly and accurately presented and does it cite the current literature?
Partly

Is the study design appropriate and is the work technically sound?
Partly

Are sufficient details of methods and analysis provided to allow replication by others?
Partly

If applicable, is the statistical analysis and its interpretation appropriate?
I cannot comment. A qualified statistician is required.

Are all the source data underlying the results available to ensure full reproducibility?
Yes

Are the conclusions drawn adequately supported by the results?
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Nursing health education

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 01 July 2020

https://doi.org/10.5256/f1000research.20615.r65131

✔ **Dibya Sharma**
School of Nursing, Manipal College of Medical Sciences, Pokhara, Nepal

Introduction:
- **1st paragraph** – Citation number can be provided once at the end of the paragraph instead of repeating it a number of times. Similar correction can be done in 6th and 7th paragraph.

Methods:
- Is it a observational analytical or descriptive cross sectional study? I think the design adopted is descriptive cross sectional study.
- How did you do the scoring in percentage and average scoring (2.27, 2.45 & 2,54), please discuss about the scoring part in detail.
- **Data acquisition:** Is the data shown in the table? I think it's better to write "frequency distribution is shown in the bar diagram and line graph."

Results:
- Please write the sample size n = 101 in all the figures.
- **Figure no. 2:** No need to keep percentage in the 2 decimal like 120.00%, 100.00%, 80.00% etc. instead it can be written as 120%, 100%, 80%, etc.
- I think there is repetition of the same data in line graph (Figure 2) and bar diagram (Figure 5)…can keep only of one those.

Is the work clearly and accurately presented and does it cite the current literature?
Yes

Is the study design appropriate and is the work technically sound?
Partly

Are sufficient details of methods and analysis provided to allow replication by others?
Yes

If applicable, is the statistical analysis and its interpretation appropriate?
Not applicable

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?
Yes

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 17 June 2019

❌ **Enrique Castro-Sánchez** (iD)
NIHR Health Protection Research Unit in Healthcare Associated Infection and Antimicrobial Resistance, Imperial College London, London, UK

Dear authors,

Many thanks for the opportunity to review your manuscript, reporting on the concordance between Nepali nurses' knowledge and performance of clinical interventions included in the ICOUGH program targeting postoperative complications. The following comments and suggestions aim to clarify and improve the paper for the readers.

Introduction
I thought that the content was meandering from one topic to other. For example, the first paragraph focused on the prevalence of surgical specialities, but then the following paragraph touched upon the Nepalese human resources crisis, particularly on nurses (I would suggest not to use 'manpower' and talk about 'human resources'). I think that it would have been very useful to learn about the prevalence of surgical complications in Nepal or at least, the 3 hospitals sampled.

Further, the ICOUGH program is mentioned, but would be useful to offer 1-2 sentences regarding any potential improvement obtained by ICOUGH. Additionally, I think that it would be necessary to expand a bit on each of the components, particularly what 'oral care', 'understanding' and 'get out of bed' entail. Finally, readers would benefit from any information about adaptation/cultural interpretation of the ICOUGH in Nepal.

It would be necessary as well to offer some evidence about knowledge-performance gaps related to bundles, and even how effective these have been or not. There would be enough room to include such details with a revision of the content related to nursing workforce, which is the lengthiest in the Introduction.

Methods

I could not really understand how the components of the ICOUGH initiative were corroborated in practice. The content mentions "We initially confirmed the practice of inclusions of all the variables listed within the I COUGH initiative among the daily assigned nursing task assignments in all these three hospitals".

Also, the authors talk about 'short educational programme', and it would be necessary to add further details about what the programme included.

There is a mention to Ethical considerations, but there is no information about the selection, recruitment, consenting process, as well as the number of nurses invited to take part that led to the 101 responses.

Results
The authors could offer some further statistical measures, such as ranges, and if & are compared across centres, then it would be useful to consider whether to carry out a comparison of percentages analysis. Also, I feel that the text could include the % of the most frequently mentioned variables.

I suggest that the graphs avoid using 3D figures, which do not really offer much. Figure 1 should have axes and axes titles, and I am not sure about how well the figures facilitate comparison. Figure 2 should also include the missing axis title and remove the 120% if proportion of nurses. Each of the letters of ICOUGH should be defined.

I suggest that Figure 3 removes the stacked results and presents 3 bars for each hospital, and same for Figure 5. This graph, additionally, seems not to have results for each of the hospitals…

Discussion
The 1st para introduces data unrelated to the study or the topic, by talking about physiotherapists.

The authors then shift the debate towards lack of staff but then also towards the need to ensure clinical leadership. I don't understand the sentence "Nurses need to gain autonomy over their own practicing behavior in order to improve their patients' clinical outcome" – what does "gaining autonomy" mean?

The text is also confusing here: "There should be task organization skill simulations to improve their ability to manage such high cognitive managerial tasks" (what does "task organization skill simulations" mean?). Equally, this paragraph is not clear "Future shortages of nurses may be unpreventable, but making provisions for effec-tive interdisciplinary teamwork, coupled with pivotal approaches for determining quality insurance and promoting safe environments for patients, could help mitigate their harmful impacts." Finally, the sentence "the application of care bundle approaches could promote the notion of "effective tasking through minimal manpower". Needs referencing, and particularly the notion of "effective tasking", particularly as task-based nursing is now and outdated approach to care.

Conclusion
Could the authors offer some more evidence that "Such initiatives [*patient focused care bundle approaches*] can promote health care provider autonomy on patient care"?

Is the work clearly and accurately presented and does it cite the current literature?
Partly

Is the study design appropriate and is the work technically sound?
Partly

Are sufficient details of methods and analysis provided to allow replication by others?
Partly

If applicable, is the statistical analysis and its interpretation appropriate?
Partly

Are all the source data underlying the results available to ensure full reproducibility?
Yes

Are the conclusions drawn adequately supported by the results?
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: infection prevention and control, antimicrobial stewardship, health literacy, nursing

I confirm that I have read this submission and believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

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