

RESEARCH

Nursing perspectives and strategies in patients with respiratory insufficiency

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Abstract

Background: Approximately 30% of patients admitted to an intensive care unit experience respiratory distress. The COVID-19 pandemic has led to an enormous increase in patients with respiratory symptoms. Nurse competence is essential for ensuring quality treatment and care for these patients; however, research on nursing strategies for patients with respiratory insufficiency is limited.

Aim: This study explored nurses' perspectives on and nursing strategies in patients with respiratory insufficiency when admitted to three different intensive care units.

Design: The study had an exploratory, descriptive, qualitative design.

Methods: Four focus group interviews with a total of 20 nurses, critical care nurses, and critical care nursing students were conducted. Data were analysed using content analysis.

Results: Participants' perspectives fell into two main themes: "nurse competence" and "the art of balancing." "Nurse competence" incorporated the sub-themes "observations and assessments," "to make decisions," and "collaboration." The theme 'the art of balancing' incorporated the sub-themes "nursing interventions," "patients feeling safe," and "patient participation."

Conclusion: This study contributes new knowledge about nurses' perspectives on patients with respiratory insufficiency. Nurse competence was assumed essential to observe, assess, and treat patients with respiratory insufficiency. Nursing strategies included balancing nursing interventions, conducting medical treatment, and taking a whole-person approach to patients' needs.

Relevance to clinical practice: The COVID-19 pandemic has shown the need for nurse competence in caring for patients with respiratory insufficiency. This study adds to existing literature emphasizing the need for competence in health care services. Caring for patients with respiratory insufficiency requires nurses with experience; competence in observation, assessment, and medical treatment; and a whole-person approach to patients' needs.

KEYWORDS

interventions, nurse competence, nursing strategies, patient safety, respiratory insufficiency

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1 | BACKGROUND

Acute respiratory insufficiency is one of the most common reasons for admissions to intensive care or medical surveillance units.¹ Respiratory insufficiency may reflect cardiopulmonary diseases, systemic diseases (eg, anaemia), or adipositas.² Dyspnoea is one of the most prevalent and distressing symptoms experienced by patients in intensive care units (ICUs).³⁻⁵ Despite this, dyspnoea is under-reported.⁵ The new coronavirus, SARS CoV-2, outbreak has been declared a pandemic.^{6,7} The disease caused by this virus, COVID-19, may lead to acute respiratory distress syndrome (ARDS) and death. It has been estimated that four of five COVID-19 patients experience mild symptoms, but up to 20% will require hospitalization.⁸ A study from Norway showed that 69% of patients with COVID-19 had dyspnoea.⁹

Nurses are a key component of the health care system and play an important role in providing high-quality health care services.¹⁰⁻¹⁴ It is essential that nurse competencies are compatible with the health care service demands.¹⁵ Competence has been described as a combination of knowledge, fitness, assessments, and attitudes.^{16,17} It has also been described as a professional capability, or a "combination of knowledge, skills, personal qualities and understanding employed in an effective manner in not only predictable specialist contexts, but in unexpected and unstable circumstances".¹⁸ The pandemic is an unexpected and unstable circumstance that is challenging nurse competence worldwide.

An essential principle in evaluating patients with respiratory insufficiency is differentiating patients who need immediate intervention from those who can wait. Such evaluations require physical examinations of vital parameters, auscultation of the lungs, and assessment of dyspnoea.¹⁹ Research indicates that nurses are able to conduct such evaluations to the same level of competence as physicians when they have received targeted education.²⁰

Assessing symptoms in ICUs may be challenging because of patients' inability to self-report. Endotracheal intubation, mechanical ventilation, and sedation all limit patients' ability to express their needs or symptoms verbally. As a consequence, symptoms may be overlooked and interventions delayed, leading to preventable errors and complications.^{21,22} Several studies have emphasized the knowledge gap related to nursing strategies in patients with respiratory insufficiency.²³⁻²⁵ As a nurse anaesthetist/PhD, two critical care nurses, and a critical care nursing educator/MSc, all female, we wanted to explore nurses', critical care nurses', and critical care nursing students' perspectives on patients with respiratory insufficiency. As this knowledge is useful to a broader audience of nurses outside the ICU, we chose not to focus on critically respiratory ill patients, for example, in the prone position, but on basic assessments and strategies.

2 | AIM

The aim of this study was to explore nurses' perspectives and strategies in patients with respiratory insufficiency when admitted to ICUs.

What is known about the subject

- Acute respiratory insufficiency is one of the most common reasons for admissions to ICUs.
- Respiratory symptoms and the need for interventions occur frequently in patients with COVID-19.
- Little is known about nursing perspectives and strategies in patients with respiratory insufficiency.

What this paper contributes

- Nurse competence in observation, assessment, and intervention is needed in patients with respiratory insufficiency.
- Nurses use non-technical skills, such as situation awareness, decision-making, and collaboration, to meet patients' needs.
- Education and training are needed to enable nurses to balance nursing and medical interventions, make patients feel safe, and promote patient participation.

3 | METHODS

The study followed an exploratory, descriptive, qualitative design. Such a design is appropriate when exploring how individuals experience a phenomenon dependent on their backgrounds, interests, and interpretations.²⁶ The study adheres to the Consolidated Criteria for Reporting Qualitative Research (COREQ)²⁷ (see Supporting Information S1).

3.1 | Setting

The study was conducted in three ICUs in a hospital in south-eastern Norway.

3.2 | Participants

We used a strategic sampling method designed to include nurses with various levels of education and experience: nurses, critical care nurses, and critical care nursing students. In Norway, critical care nursing students are registered nurses with a minimum of 2 years of clinical practice before enrolment in the education programme. Critical care nurse education lasts from 18 months to 2 years and results in a master's degree. We invited nurses from three different units: the ICU, the postoperative anaesthesia care unit (PACU), and the medical surveillance unit (MSU). In the event of deterioration, patients with respiratory insufficiency are primarily admitted to one of these three wards. Leaders in each unit selected nurses assumed to be rich in information

and experienced in caring for patients with respiratory insufficiency. Inclusion criteria for participation were: registered nurse working in his/her respective unit for a minimum of 1 year in a 75% or greater clinical position. The students were in their second semester of an 18-month further education programme.

3.3 | Interview guide

An interview guide based on earlier research on respiratory insufficiency^{20,28} was developed over several iterations among the researchers until consensus was reached (see Interview guide). The interview guide was piloted with two nurses and two critical care nurses, who had no comments on relevance, clarity, or content. The interviews started with a presentation of the study aims, followed by an open dialogue, during which the participants were encouraged to freely discuss their experiences related to patients with respiratory insufficiency. The interview guide was used to remind the interviewers to cover the themes. To obtain rich and meaningful data, probing questions were sometimes asked to extend or narrow the field of interest (eg, "could you please elaborate on this?"). All authors participated in the interviews, and each interview was conducted by two authors: a moderator and an observer.

3.4 | Data collection

Data were collected through focus group interviews held in the spring of 2019. Focus groups are appropriate when exploring experiences and perceptions, which participants can discuss and develop through group discussions.²⁹ Each interview was conducted by one moderator and one observer.

The interviews took place in a quiet room at the hospital, separated from the units, and were conducted without interruption. They took place at the end of the participants' working day and lasted between 40 and 70 minutes. At the end of the interviews, the participants were presented a verbal summary of the content to ensure their perspectives had been correctly interpreted. The interviews were recorded digitally and transcribed verbatim by the authors within a week of each interview, after which the original recording was deleted.

TABLE 1 Example of the analysis process

Transcript	Codes	Sub-theme	Theme
... to do observations and assessments continuously, but also to know what to do with these observations... and through some experience, to be one step ahead	Observation assessment Knowledge experience	Observations and assessments	Nurse competence
... the nurses do not show that they are afraid, and sometimes, we have bed-side discussions about the patients' deteriorating condition ...The patient hears and catches both verbal and non-verbal communication	Not show afraid bedside discussions deteriorating condition Patient hears verbal and non-verbal communication	Patients feeling safe	The art of balancing

3.5 | Analysis

During and immediately after the interviews, the interviewers made reflexive notes to capture the setting and their reflections regarding the participants' non-verbal and emotional expressions. Each author read the interviews by herself to obtain a sense of the whole. In line with recommendations from Braun and Clarke, thematic content analysis was used to analyse the data.³⁰ The analysis was conducted as an iterative process of four steps: (a) familiarization through reading and rereading of the transcripts, (b) initial and inductive coding, (c) sorting and collating of codes into potential themes (patterns), and (d) defining and naming final themes and interpreting the overall story told by the data. Two researchers independently and inductively coded the transcripts in Norwegian. The codes were then compared and discussed until consensus was reached. Codes, themes, and final analysis were subject to interpretation and discussion throughout the research process until consensus was achieved. Quotations were selected to support each description and to secure the trustworthiness of the data. Table 1 gives an example of the analysis process.

3.6 | Ethical considerations

The study was conducted in line with the principles of research ethics outlined in the Declaration of Helsinki, based on confidentiality and on written, willing, informed consent to participate.³¹ In Norway, the Regional Committees for Medical and Health Research Ethics (REC) are responsible for approving medical and health-related research projects. When patient data are not involved in the project, we do not need approval from the REC to perform the study. However, the study was approved by the Norwegian Centre for Research Data (reference no. 437911).

4 | RESULTS

We conducted four focus groups: one with critical care nurses from the ICU and MSU (n = 6), one with nurses from the ICU and PACU (n = 6), one with nurses and critical care nurses from the MSU (n = 3), and one with critical care nursing students (n = 5). Because of confidentiality

TABLE 2 Themes and sub-themes

Nurse competence	Observations and assessments
	To make decisions
	Collaboration
The art of balancing	Nursing interventions
	Patients feeling safe
	Patient participation

issues, the ages and experience levels of the participants are not reported. The participants' ages ranged from 28 to 52 years, their years of work experience as nurses ranged from 2 to 38 years, and only one of the participants was male.

We identified two themes and six sub-themes describing nurses' perspectives on and nursing strategies for patients with respiratory insufficiency (see Table 2). All participants in all focus groups took active part in the discussions.

5 | NURSE COMPETENCE

5.1 | Observations and assessments

Participants in all interviews described specific observations they made of patients with respiratory insufficiency. Their observations were related to patients' symptoms, what they did to collect information about patients' condition, and steps taken to identify patients' needs. These symptoms included free/unfree airways, movements of the thorax, oxygen saturation, skin colour and texture, respiratory rate, use of accessory muscles, respiration sounds, and immersions. The students emphasized assessing patients using an "A and B" (airways-breathing) approach. One nurse described a typical patient as follows: "I picture a COPD patient because I have extensive experience with such patients. I picture a patient leaning forward, struggling to breath and lip breathing".

Descriptions included not only visual symptoms but also those discovered through touch and listening. A critical care nurse said: "to see and feel if the chest is moving synchronously on both sides, auscultate basally for sounds that are not supposed to be there at inspiration or expiration". Utilization of a stethoscope varied: Critical care nurses were more used to this tool but also emphasized a need for more training to identify different pathological conditions, particularly related to self-breathing patients. Moreover, available stethoscopes were reported to be of low quality.

Participants reported that the information they gained through observations enabled them to identify and predict patients' needs. One nurse said:

Whether they are sedated and we have to actively keep airways free and they need ventilation support, or they are anxious and in a panic, they may feel they are not getting enough air [and] are afraid of the mask¹ and the treatment we try to enforce on them.

Participants mainly referred to patients with established airway diseases who were newly operated on or who were obese, while the critical care nurses were also referred to patients with, for example, cardiac failure. Critical care nurses also reported performing their own analyses of blood gas results, which they used to predict and prepare for an exacerbation of symptoms: "...if the blood gas is moving in the wrong direction [and] the pCO₂ keeps increasing, in spite of the interventions, then we have to collaborate and call for help".

5.2 | To make decisions

All the participants were aware of relevant interventions in patients with respiratory insufficiency. One nurse stated:

...to follow the saturation, look at the skin, observe for cyanosis... But when this is not enough, then we have to mobilize [them and] turn [them] from side to side. If they are awake, [we must] use a PEP "flute"² [Thera] and make them sit up on the bed... Otherwise, they need medications...

Another nurse added: "positioning...how much you elevate the back, see how the mucus moves". Overall, these interventions focused on preventing deterioration. One nurse emphasized the need:

To think what may happen, what the patient has been through—to be in front of an event, to think prevention. Not to wait until the situation has occurred.

Moreover, all participants emphasized the importance of mastering the medical and technical equipment and the ability to use this equipment when needed.

Participants stated that professional knowledge was needed to make decisions, especially when collaborating with other professionals, such as physicians or physiotherapists. To make quick decisions, critical care nurses emphasized the need to predict and foresee the development of patients' condition. They linked this to experience and cases of being in similar situations before. One of the critical care nurses said:

You have thought this thought before, and now a little bit earlier and further, and you have seen the consequences. Maybe that is why we act faster the next time.

Critical care nurses also reported initiating interventions and treatment independently, both sometimes after consulting a physician and sometimes without engaging in such a consultation.

5.3 | Collaboration

Participants experienced an extensive need to collaborate when caring for patients with respiratory insufficiency. They collaborated with other nurses, physicians, and physiotherapists. The participants needed to feel supported and to have someone to ask for help when they felt insecure. They wanted this support to be easily available and preferably near their patients. In contrast, some of the students felt too many people were present, especially in handover situations.

Participants also reported difficulties collaborating and expressed the importance of experience and feeling safe in their own roles. One nurse stated:

You need experience to tell others in the team around such patients what to do and to secure that the information is received and interpreted correctly, and also that this is actually done.

This quote was mostly related to communication. The participants sought to create a common understanding of the situation and the interventions and actions needed.

Most of the participants believed that the physician had primary responsibility for the patient, even though the nurses were the ones continuously at the patients' bedsides, with in-depth knowledge about the patients' overall situation. In contrast, critical care nurses reported being more independent, with one claiming:

...[When] we receive a mask patient, [we] just put it on and get started... And then they (the physicians) arrive after some time...".

Critical care nurses were also very aware of the reason for this delegated responsibility. As one noted:

... Actually, we are better at this. Better than [the] newly appointed. Internists have reached an acceptable level... But still, a mask is not a respirator, and they [physicians] are not very skilled at this, actually...

Some of the participants had experienced what they defined as "a struggle amongst professions" in relation to patients with chronic respiratory insufficiency. One of the critical care nurses referred to the following concrete situation:

When the nutritionist says that the patient has to get 3000 calories per 24 hours, and the physiotherapist arrives and says that the patient cannot eat now because he has to get up off the bed, and the nurse arrives and claims that the patient is to get the medication... Each one of them perceive that their tasks are the most important.

Participants also noted that, as patients with respiratory insufficiency often had complex conditions, their stays necessitated health care workers from several professions. This was perceived as creating an extra challenge.

6 | THE ART OF BALANCING

In all the interviews, participants emphasized the need to balance different considerations, including the patients, their colleagues, and the individual and situational needs in all patients with respiratory insufficiency.

6.1 | Nursing interventions

First, participants reported a need to balance medical treatment, mask treatment, and the patients' clinical condition. One nurse stated: "Often, you have to use time and effort to calm them down, to sedate [them] enough so that they accept the mask". This was supported by a student, who said: "...and this is a difficult patient group, because

they are very scared. You cannot just medicate because this affects the respiratory function".

The situation demanded that nurses had knowledge and experience but also that they knew the patient. One nurse reflected:

It is important with continuity that you know the patient, you know that every time he turns to the left side, his tidal volume decreases, the saturation decreases. You have to pre-oxygenate before turning, for example...

This differentiated the nurses' continuous presence from the more intermittent presence of the physicians. For example, physicians often set unreachable targets for patients' vital parameters as a result of not knowing their normal status.

Moreover, participants needed to balance medications with a holistic patient approach. Participants emphasized the importance of hydration, oral care, and nutrition as essential aspects of caring for patients with respiratory insufficiency.

6.2 | Patients feeling safe

All the participants described patients with respiratory insufficiency as anxious and noted that the most important thing was making them feel safe. Here, the importance of knowledge and experience was apparent. One of the students described the need: "To act nice and calm. To indicate that we are present". To achieve this, all the participants reported the need for sufficient time and enough staff. Interventions to promote safety were described using the phrases "to be with," "to be present," and "to hold his hand." One of the nurses said:

He needed the mask, but continuously tried to remove it. I held his hand, and then he calmed down a bit. I showed that I am here—I will not leave you.

The need to make patients feel safe was also related to procedures and the need to conduct these quietly, allowing the patient to relax by, for example, turning the lights down. In addition, the participants recalled turning on music or the radio to "let the patient listen to something else than the ventilator pumping or all the electrical equipment in the room".

The most challenging situation when trying to make patients feel safe involved introduction of the mask. Here, information was reported to be essential. One of the critical care nurses said:

We have to use ourselves to calm down. We feel safe, then they have to feel safe. We will fix this. This usually helps.

6.3 | Patient participation

Patient participation was also seen as a central nursing strategy for patients with respiratory insufficiency. Information had to be adjusted to allow patients to make proper choices regarding their own treatment. Here, too, participants focused on mask treatment, noting situations in which patients were panicked and anxious about not getting any air. One nurse stated:

You try to catch eye contact, strive to show that you will be here, and allow time to do this. If you manage to collaborate, the process most likely will succeed.

When patients did not collaborate, the participants often needed to sedate the patients to fulfil the treatment. One critical care nurse emphasized:

Panic attacks lead to a closed situation. They are not able to collaborate. I am not able to calm them down. When sedating, the respiration is also affected. They do not want to, but they need it, and in that situation, they do not understand what is best for them.

One concrete situation of patient participation was the opportunity to choose the type of mask:

He explained that he preferred the one that blew in and out, and that was the NIV [non-invasive ventilation]. We collaborated throughout, and he got to decide something himself.

7 | DISCUSSION

The findings of this study add knowledge about nurse competence needs and nursing strategies in patients with respiratory insufficiency. Nurses, critical care nursing students, and critical care nurses all experience a need for observation and assessment competence to make the right decisions and collaborate as part of a team. Nursing strategies when caring for patients with respiratory insufficiency included trying to establish a balance between nursing and medical interventions, focusing on making patients feel safe and allowing patient participation.

Observations enabled the participants to identify and predict patients' needs. These predictions were then the basis for planning, preparing, preventing, and "being ahead of" deterioration or exacerbation of symptoms. Observation may be linked to non-technical skills and "situation awareness," which has been defined as "a state of knowledge, and an umbrella term for a range of cognitive processes, or as a skill".³²⁻³⁴ Research has described three levels of situation awareness: perception, understanding, and being able to predict.³⁵ Situation awareness has been identified as an essential skill for effective decision-making by nurses,³⁶ and research has indicated that more experienced personnel more often possess and utilize situation awareness to plan, prioritize, and evaluate.³⁷ This is supported by findings in the present study.

Participants reported that they sometimes made independent decisions and sometimes relied on help. Students found it more difficult to make decisions without consulting a colleague, a supervisor, or a physician. Research has shown that decision-making in nursing practice is a complex and dynamic process that affects patient outcomes.³⁸ Consequently, nurses should be aware of their own role in decision-making and should develop their own decision-making ability. An increase in dyspnoea or an increased struggle to breathe, for example, may warn of a worsening condition, so the first response should be to identify the deterioration and, if possible, address it. Nurses have reported that physicians take appropriate actions in

the large majority of cases in which the nurses observed and identified, for example, increased dyspnoea.²⁸

Participants described collaboration as essential to taking care of patients with respiratory insufficiency. Experience and feeling secure in their own role in the team impacted whether the participants were able to express their meanings in an interprofessional team. Collaboration, situation awareness, and decision-making are all non-technical skills, and Reader et al. have emphasized the need for more research on such skills in ICUs.^{39,40} Research has shown that a lack of non-technical skills leads to complications and undesirable outcomes.⁴¹⁻⁴⁴ Our findings support the importance of such skills for nurses' ability to observe, assess, and evaluate patients' conditions.

Nurses described a need to balance medical treatment, mask introduction, assessment of patients' clinical conditions, and a holistic patient approach. Research supports the observation that patients with respiratory insufficiency experience great anxiety.⁴⁵⁻⁴⁷ This may, in turn, increase respiratory stress and, thereby, length of stay in the ICU.⁴⁸ Hence, a holistic approach is an important nursing strategy for these patients.

Treatment and caring alternatives in patients with respiratory insufficiency varies across countries and settings because of variations in education, demands, and rights. A lack of support from management, limited time, and few opportunities for systematic reflections also affect treatment choices and decisions.⁴⁹⁻⁵¹ Our findings indicate a need for more education related to non-technical skills, decision-making, and collaboration alongside clinical observation, nursing intervention, and medical treatment. Each of these skills is important when planning critical care nursing curricula.

Our study findings indicate that assigning nurses without experience or specific training to care for patients with respiratory insufficiency may result in challenges because of the complexity and burden of these symptoms. In this vein, the COVID-19 pandemic has challenged the capacity of health care services worldwide in general and of nurse competence in particular. A recent publication showed that 17.3% of COVID-19 patients had a respiratory rate greater than 24 breaths/min, and 27.8% received supplemental oxygen. During hospitalization, 373 patients (14.2%; median age, 68 years [IQR, 56-78]; 33.5% female) were treated in an ICU, and 320 (12.2%) received invasive mechanical ventilation. Moreover, these patients are exposed to advanced interventions, such as mechanical ventilation in the prone position and extracorporeal membrane oxygenation (ECMO).⁵²

Our study was conducted before the pandemic and did not focus on COVID-19-related issues. However, the number of patients with chronic respiratory insufficiency is high. In 2017, the Norwegian Nurses Association published a report based on an evaluation of nurses with further education in anaesthesia, paediatrics, critical care, operating room, and cancer nursing.⁵³ The conclusion was that there was a lack of information about nursing capacity and that the scarcity of higher-educated nurses was significant and increasing. Hence, the COVID-19 pandemic emphasizes the importance of increasing nurse competence in general and critical care nursing competence in particular regarding patients with respiratory insufficiency.

All the units in this study involved several patients with respiratory insufficiency, and few differences among interviews were identified. Nevertheless, critical care nurses seemed to offer more in-depth reflections regarding these patients and to engage in more independent decisions regarding treatment and care. Together, this shows the importance of further and specialized education, in addition to experience, when caring for patients with respiratory insufficiency.

Acknowledging patients' respiratory distress, early identification of conditions requiring early intervention, implementation of nursing strategies for treatment, and handling and medication have all been identified as "best practices" in patients with respiratory insufficiency.⁵⁴ This is supported by the findings of our study. Moreover, findings in this study identify areas that may be included in quality improvement initiatives in nursing and critical care nursing education and practice.

7.1 | Strengths and limitations

The study was conducted in only one hospital, and findings may not be generalizable. Nevertheless, our findings might be transferred to similar contexts. We asked leaders to select participants for the focus group interviews, and this may have biased our findings. Moreover, this study involved nurses from wards that did not provide ECMO, and no questions focused specifically on severely ill respiratory patients who were prone. Hence, our findings focus more on basic respiratory assessments of these nurses.

We included participants from three different units with a variety of ages and experience levels, which may increase the validity of the study. All authors took part in interviewing, analysis, and interpretation, and the process is transparent. Moreover, we reflected on our preconceptions during the analysis of the data, which supports the credibility and confirmability of the results. The questions in the interview guide were developed by the authors, and some questions could have been worded differently for improved clarity. Nevertheless, piloting did not identify any issues. The focus groups were homogeneous, providing a comfortable context for open discussion. Credibility was increased by including participants from different units. During the interviews, the moderator ensured that all participants had equal opportunities to express their experiences. Trustworthiness was increased by validating statements during the interviews by posing clarifying questions.

8 | CONCLUSION

This study contributes knowledge about nurse and critical care nurse competence and nursing strategy needs in patients with respiratory insufficiency. The findings indicate that competences related to observation, assessment, and interventions are essential. Nursing strategies included balancing nursing interventions, medical treatment, and a whole-person approach to patients' needs.

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DATA AVAILABILITY STATEMENT

Data will be available upon request to the corresponding author.

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ENDNOTES

¹ Mask: the mask used in non-invasive ventilation (NIV)

² PEP flute: flute providing positive end-expiratory pressure that patients breathe through

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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