

## Investigating nursing staff experiences and experts recommendations evolution as Covid-19 infection curve flattens globally: an integrated literature Review

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### Abstract

**Significance:** The article investigates the changing experiences and challenges facing nurse sin the wake of the Covid-19 pandemic. The study seeks to evaluate the emerging issues and challenges facing nurses that were not clear at the start of the pandemic but have gradually come to the fore through the emerging nurses own experiences and experts opinions.

**Methodology:** The article applied integrated literature review. This included the use of key words and sourcing publications, all within the year 2020 and which either offered experts opinions on nursing issues or reflections and experience accounts by respective nurses. Three database, Medline, Scopus and CINAHL were used and a total of 18 articles used in the findings section.

**Findings:** The article demonstrates a clear shift from the initial experiences and opinions at the start of the pandemic and the current experiences and expert recommendations as the Covid-19 infections slow down globally.

**Conclusions:** The article recommends the need of nurses psychological support centers creation, a holistic focus on all nurses rather than just the front line nurses, and the expansion of the nurse clinical autonomy.

**Key Words:** Nurs\*, experiences, Covid-19, needs

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### I. Introduction

The World Health Organization had designated the year 2020 as the year of Nursing and Midwifery. This was expected to be a year for highlighting the professional issues to the public and seek to not only creates awareness of its value but also shape and influence policy development (Al-Mandhari, Gedik, Mataria, Oweis & Hajjeh, 2020; Fraser, 2020). Unfortunately, this was crowded by the emergence if the Covid-19 Pandemic in the late 2019 in Wuhan China and its eventual spread across the globe (Desai & Patel, 2020; Rocklöv & Sjödin, 2020). With the pandemic rise and spread across the globe, the role of nurses became apparent. This was on two levels. First was among the front line nurses who were directly involved with combating and helping care for Covid-19 patients and on the usual wards nurses who had to guarantee that the WHO policy and regulations on social distancing, hygiene, and general public safety were observed (Lee, 2020). At the initial stages, focus was predominantly placed on the front line nurses and the need for protective equipment and medical support.

At the initial stages, studies were dominated by the focus on ensuring a reduction in the actual virus spread. This underscored the need to reduce the positivity rates especially among the Front line nurses. However, it emphasized more on the actual virtual spread while overlooking the psychological, mental and social implications the strained working conditions faced. For instance, initial studies and peer review publications focused on the creation of a campaign to ensure that the front line workers, including the front line nurses had enough protective wear (Buheji & Ahmed, 2020). This led to a debate and a campaign on the provision of personal protective equipment (PPES) for the front line workers. The sustained campaign and focus on PPEs has enabled protect nurses increase their safety, as well as build their confidence while caring for Covid-19 patients (Jackson, Bradbury- Jones, Baptiste, Gelling, Morin, Neville & Smith, 2020; Labrague & De

los Santos, 2020). However, more recent literature on the pandemic indicates a lack of sufficiency in applied strategies to addressing nursing needs. Some of the emerging aspects have been the realization that the usual ward (UW) nurses face the same psychological concerns and worries as the front line (FL) nurses (Meghani, & Lalani, 2020; Liu, Shen, Chen & Liu, 2020).

Further, studies have demonstrated that beside the need for clinical protection using the PPEs, nurses had additional needs and concerns such as concerns for their families and moral and ethical concerns when dealing with Covid-19 patients among others (Labrague & De los Santos, 2020). This change in literature flow has created the need for professionals and experts to investigate and evaluate the alternative ways through which all the nurses, both FL and UW nurses could be cared for as well as in ensuring that all their needs are equally addressed. The aim of the developed integrated literature review is to place into context the nurses experiences, both FL and UW nurses forming a basis for evaluating literature on the ideal strategies and policies to handle nurses concerns and emerging issues both in handling the current pandemic and in the future.

## **II. Materials and Methods**

The study applied an integrated literature review design. Since the pandemic outbreak, there have been numerous studies and publications on Covid-19. The study examined literature in two main clusters, the nurses' experience and the expert opinions. In a bid to build Covid-19 resource centers, a majority of the publications encouraged self-reflections and nurses experiences as a part of their publications (Lubbe, Ham-Baloyi & Smit, 2020; Fanelli & Piazza, 2020). It is through such reflections of both the front line and the usual ward nurses that a picture and image of the changing nurse's needs and challenges are demonstrated over the last one year since the start of the year 2020. This was in addition to the publication of the expert's opinions and recommendations. While as the nurses experiences were a reflection of the first hand encounters in dealing with Covid-19 patients, the expert opinion publications were a policy guidelines and direction demonstrating the actions taken and policy recommendations to support the nurses' actions.

As one of the most impactful pandemics in over a century, the changing nature of the pandemic has led to changing and shifting experiences and expert opinions (Labrague & De los Santos, 2020). This is a change in literature whose examination could help indicate some of the current nurse's challenges in handling Covid-19 patients as well as inform on policy guidelines and directions (Lester, Holahan, Siskind & Healy, 2020). The study developed an integrated literature review to examine the current changes on the tone and flow of expert opinion ideas. Strategically, its design was to investigate the current focus on not just the virus spread risks, but also the social, psychological, and mental needs of all nurses, not just the front line nurses.

The study design included the sampling and collection of publications and articles preferably published on peer reviewed journals. This was sourced from three different databases the Scopus, Medline, and CINAHL. This was achieved through the use of key words and phrases. They included *nurs\**, *experience\** *needs\** *Covid-19*. The study established a total of 73 articles; CINAHL (22), Medline (27), and (24) Scopus, respectively. After eliminating the duplications, the study remained with 45 potential articles. Further, an inclusion criteria were applied that included using only the studies with an English version and with full Pdfs. This was in addition to an exclusion criterion that as for all studies published prior to 2019 December when the Covid-19 was officially reported in Wuhan China. The application of the exclusion and inclusion criteria narrowed down the articles to 19. These were the studies used in the analysis. The findings outcome in terms of design applied was; 13 qualitative designs, 2 quantitative designs, 4 literature review studies, respectively. Only (9) articles used in the analysis had been developed through primary data collection. This is a limitation explained by the fact that there was minimal allowed interaction during the pandemic period.

## **III. Results**

### **Initial Literature Themes Focus**

#### ***Health safety and Infection Risks Theme***

With the Covid-19 outbreak, the main focus was on the front line nurses. These were directly involved in handling patients suspected and confirmed to have contracted the novel Corona virus. Expert opinions were geared towards safeguarding this category (Meghani & Lalani, 2020). With reports such as a rising positivity rate among nurses in Wuhan China and the death of nurses and other healthcare worker, experts opined on the need to ensure the protection for this nursing category (Zhang, Wei, Pan, Wang, Li & Wei, 2020; Liu, Zhai, Han, Liu, Liu & Hu, 2020; Wu, Wang, Luo, Lin, Anderson & Qian, 2020). Some of the provided opinions at the initial stages were the creation of awareness, enhanced training for the nurses, and the provision of personal protective equipment (AANP, 2020). Arguments emerged on the need for the creation of emergency funding and procurement for PPEs as a basis for enhancing and promoting the nurse response capabilities (Meghani & Lalani, 2020; Newby, Mabry, Carlisle, Olson & Lane, 2020). In the first three months of the pandemic, it was

projected that of the infected persons, almost 15% of them were healthcare workers, a majority of them nurses in a majority of the countries (Liu, Zhai, Han, Liu, Liu & Hu, 2020; Wu, Wang, Luo, Lin, Anderson & Qian, 2020). This was a high positivity rate among front line nurses that was linked to the lack of personal protective equipment as well as the low quality and insufficiency of the used PPEs by the nurses. It is based on such findings and reports that the internal council of Nurses made recommendations to G-20 and other countries to support and aid in financing other nations with lesser capabilities to access such PPEs (Meghani & Lalani, 2020; Turale, Meechamnan & Kunaviktikul, 2020). It was through such literature that global philanthropists such as Jack ma and the Bill Gates foundation offered PPEs and testing kits for targeted healthcare workers, among them nurses globally.

### ***Front Line Nurses Focus Theme***

An additional course of the initial literature and experiences was on the safety and the health concerns of the nurses. The nurse reflected on their interactions and the health concerns they had, mainly among the front line workers (Liu, Zhai, Han, Liu & Hu, 2020; Zhang, Wei, Li, Pan, Wang, Li & Wei, 2020). An emerging theme in the literature is a risk of burnout among nurses. Coupled by the perennial risk of shortages, the rise in the Covid-19 and the high infection rates expanded the nurses' workload. Thus, experts opined on the need and value to increase the number of nurses working on the front line and the reduction on shift working hours to eliminate fatigue and the relate risk of medical errors Zhang, Wei, Pan, Wang, Li & Wei, 2020; Yi, Jamil, Gaik & Fee, 2020). Nurse reflections were equally on the rising workload and the challenges of fatigue and exhaustion they faced as front line workers.

### **Changes on Literature Themes focus as Pandemic Progressed**

The two emerging themes on the change of literature are on (i) a shift to focusing on all nurse apart from the front line nurses, and (ii) a focus on the nurses' psychological and social need apart from their health needs.

### ***Considering all Nurses Categories Theme***

There is a shifting focus on all levels of nurses. Traditionally, it was projected that the Front line nurse were the most affected by the pandemic and thus were exposed to burnout and work overload (Newby, Mabry, Carlisle, Olson & Lane, 2020). This is a direction that has been disapproved over time with more reflection's and experiences showing that nurses not o the pandemic front line were equally overburdened (Dinibutun, 2020). Studies demonstrated that although the front line nurses retained a high burden and risk of burnout, the usual wards nurses were also exposed to a rising burden (Hoseinabadi, Kakhki, Teimori & Nayyeri, 2020; Longmore, Manchester & O'Connor, 2020). This was linked to instances such as a rising number of hospital admissions and the rise in positivity rates among usual ward nurses (Zhang, Wei, Li, Pan, Wang, Li & Wei, 2020; Lester, Holahan, Siskind & Healy, 2020). This creates a shortage of the available nursing workforce. Further causes for the rising burnout among the usual ward nurses were the initial diversion of resources and finances to the front line workers. In fact, additional studies have even demonstrated a higher fatigue and burn out risks among the usual ward nurse as compared to the front line nurses. One such an instance was the (Wu, Wang, Luo, Lin, Anderson & Qian, 2020) study on 220 nurses both from the front line and usual words on a ratio of 1:1. The findings demonstrated that the FL nurses had a lower burn out rate of 13% as compared to the usual ward nurses at 39%.

### ***Nurses psychological and Mental Wellbeing Theme***

More recent studies have focused on additional aspects on nurses' well-being apart from their health exposure risk (Babore, Lombardi, Pignataro, Marino, Crudele & Trumello, 2020). There are rising concerns on the nurses' mental and psychological well-being. Through prolonged exposure to the pandemic threat and the risk of infection, the nurses are facing a rising mental instability (Woodhouse & Yeung, 2020). This has not only affected their health and well-being but also their capability and efficiency to care for the patients (Longmore, Manchester & O'Connor, 2020; Lowes, 2020). An account of the nurses' reflections demonstrates emerging themes of (a) inevitable fear and (b) extreme stress. On inevitable fear, the nurses are reported to have overtime develops a fear of their own life being in danger. This accumulates into stress especially when they experience the pain that their patients go through. Personal reflections have denoted the stress and trauma that the nurses undergo as they watch their patients conditions worsens and at times even their loosing lives, including those of their peers to the pandemic (Babore, Lombardi, Pignataro, Marino, Crudele & Trumello, 2020). Additional literature has focused on encouraging nurses to be innovative and creative in dealing with their psychological and mental limitations. This is through using platforms such as social media platforms to air their experiences

and work related challenges (Watson, 2020; Longmore, Manchester & O'Connor, 2020; Lowes, 2020). Further concerns on the nurses well-being has been raised with concerns of clinical autonomy experienced by the nurses (Ulrich, 2020; Longmore, Manchester & O'Connor, 2020) The lack of a high degree of clinical autonomy has been cited as a major deterrent on the nurses' efficiency in dealing and handling their Covid-19 patients (AANP, 2020; Newby, Mabry, Carlisle, Olson & Lane, 2020).

#### **IV. Discussion**

The above findings indicate a changing experience and expert perceptions on issues affecting nurse during the Covid-19 pandemic. The findings demonstrate a changing thematic focus from the original focus on the front line nurses and their health concerns to a holistic focus on all levels of nurses and their mental and psychological well-being. The World has experienced previous pandemics including the Spanish Flue and the other forms of the Corona visors such as the SARs and the MERs among others (Peeri, Shrestha, Rahman, Zaki, Tan, Bibi & Haque, 2020; Sinderewicz, Czelejewska, Jezierska-Wozniak, Staszkiwicz-Chodor & Maksymowicz, 2020). However, the high infection rates, global mobility, and high interconnectedness made the Covid-19 pandemic unique and different from the previous ones. Thus, at the start of the pandemic, there were numerous unknowns. For instance, the SARs and MERs pandemics were arrested and controlled both within a short period of time and within limited geographical locations. The prevalence for such outbreaks was mainly in Asia and the Middle East (Chakraborty, Sharma, Bhattacharya, Sharma & Lee, 2020; Meghani & Lalani, 2020). Thus, previous and initial publications on the pandemic, mainly by the experts in the industry were predicated on the past patterns. This is through the use of predictive models that based the forecasting and projections on past experiences and handling of pandemics.

The unique nature of the global world today created a new dimension in the illness. One such included a high prevalence rate globally and the ease and swiftness with which the infections spread from the epicenter in Wuhan China, to new epi center such as Italy in Europe and other global countries (Alzahrani, Aljamaan & Al-Fakih, 2020; Fanelli & Piazza, 2020). This coupled with a prolonged period of fighting the pandemic changed the perception and experiences among the professionals. While as initially the focus was only on the front line nurses, the resulting effects such as lockdowns and need for social distancing, constrained the working condition for nurses in other areas (Lau, Khosrawipour, Kocbach, Mikolajczyk, Schubert, Bania & Khosrawipour, 2020).

A rising positivity rate among healthcare workers, among them nurses also reduced the number of nurses serving patients, not just at the frontline, but also in the usual wards. Consequently, the hierarchy of needs for the nurses has changed overtime. The needs have shifted from the need for PPEs as a protective tool to the need for mental and psychological support due to the trauma experienced in handling and managing the Covid-19 patients (Newby, Mabry, Carlisle, Olson & Lane, 2020; Meghani & Lalani, 2020). Further, the needs have shifted from focusing on the front line workers to focusing on the entire nursing profession. It is based on the shifting needs that recommendations such as home based care have been established. This has been extended to not only include the Covid-19 patients but also other patients in usual wards who could be cared for while away from the hospitals and health facilities (Wu, Wang, Luo, Hu, Anderson & Qian, 2020). This is a basis for reducing the nurses' workload as well as lowering the risk and threat of infection for the first line workers. Further changes and recommendations are on the setting up trauma and psycho-social support centers for nurses. This is expected to ensue that the nurses remain mentally stable to execute their professional duties. Additionally, it is recommended that nurses should be accorded additional clinical autonomy. As evidenced in the USA states such as Kentucky increased nurses clinical autonomy as a way of enhancing efficiency among nurses caring for the Covid-19 patients (AANP, 2020). This is a probable future in the nursing profession.

#### **V. Implications and Limitations**

The integrated literature review delivered on its aim. The main limitation in the article development was pegged on the lack of enough primary data to rely on. Future studies should seek to quantify the nurses experiences to establish which of the reported experiences are dominant and bearing a higher impact than others.

The findings serve as a basis of understanding the changing nurses' needs and experiences in the wake of the Covid-19 pandemic. It is clear that the experiences are no longer just focused on the risk of infection, but also the long term implications. This is a demonstration that even as the pandemic spread and infection curve flattens and slows down globally, the implications among nurses is on the rise. The health, mental, and psychological implications are expected to outlast the pandemic, long after the world has discovered a vaccine. To this end, the implications are on policy development. The nursing profession, healthcare industry leaders and experts should focus on the development and creation of a framework that supports the nurses' social, mental and psychological well-being in the long run period. Further, the policy implications are on the support of a system that not only focuses on the front line workers (while not underestimating their role and unique risks),

but also one that focuses on all carders and areas of nursing staff responsibilities. The changing literature focus is a demonstration of lessons learnt throughout the pandemic and which should be engrained in policy changes for long term posterity.

## VI. Conclusion

It is evident that the nurses' experiences as report by the nurses have changed and shifted over the Covid-19 pandemic period. This is an indication of the evolving and changing nature of the pandemic. It has evolved from just a health threat to the nurses to a social challenge. This explains the changes in experts' opinions and recommendations. It is critical that the nurses' social, mental, and psychological wellness is considered. This will be valuable in enabling the nurses to not only deliver on their current responsibilities in caring for Covid-19 patients, but also in the long term as a tool to heal an easy recovery journey for the nurses. There is a need for global nations to shift their focus from just lowering the risk of Covid-19 infection for the nurses (as was the case initially) to ensuring that the nurses wellbeing in the during and post Covid-19 period is enhanced.

## References

- [1]. Wu, Y., Wang, J., Luo, C., Hu, S., Lin, X., Anderson, A. E., ... & Qian, Y. (2020). A comparison of burnout frequency among oncology physicians and nurses working on the front lines and usual wards during the COVID-19 epidemic in Wuhan, China. *Journal of pain and symptom management*
- [2]. Turale, S., Meechamnan, C., & Kunaviktikul, W. (2020). Challenging times: ethics, nursing and the COVID-19 pandemic. *International nursing review*, 67(2), 164-167
- [3]. Yi, X., Jamil, N. A. B., Gaik, I. T. C., & Fee, L. S. (2020). Community nursing services during the COVID-19 pandemic: the Singapore experience. *British Journal of Community Nursing*, 25(8), 390-395.
- [4]. AANP, N. P. (2020). COVID-19 Brings Changes to NP Scope of Practice
- [5]. Liu, Y. E., Zhai, Z. C., Han, Y. H., Liu, Y. L., Liu, F. P., & Hu, D. Y. (2020). Experiences of front-line nurses combating coronavirus disease- 2019 in China: A qualitative analysis. *Public Health Nursing*.
- [6]. Lester, P. E., Holahan, T., Siskind, D., & Healy, E. (2020). Policy recommendations regarding skilled nursing facility management of coronavirus 19 (COVID-19): lessons from New York state. *Journal of the American Medical Directors Association*, 21(7), 888-892
- [7]. Newby, J. C., Mabry, M. C., Carlisle, B. A., Olson, D. M., & Lane, B. E. (2020). Reflections on Nursing Ingenuity During the COVID-19 Pandemic. *The Journal of Neuroscience Nursing*
- [8]. Zhang, Y., Wei, L., Li, H., Pan, Y., Wang, J., Li, Q., ... & Wei, H. (2020). The Psychological Change Process of Frontline Nurses Caring for Patients with COVID-19 during Its Outbreak. *Issues in Mental Health Nursing*, 1-6
- [9]. Watson, S., (2020). Aye corona! Experiences of an HIV nurse in a time of COVID-19. *HIV Nursing* 20 (2), 43-46
- [10]. Hoseinabadi, T. S., Kakhki, S., Teimori, G., & Nayyeri, S. (2020). Burnout and its influencing factors between frontline nurses and nurses from other wards during the outbreak of Coronavirus Disease-COVID-19-in Iran. *Investigacion y Educacion en Enfermeria*, 38(2)
- [11]. Ulrich, B. (2020). COVID-19 Pandemic: Nephrology Experiences-Voices from the Frontlines: Part 1. *Nephrology Nursing Journal*, 47(4), 307-311
- [12]. Meghani, S., & Lalani, N. (2020). Critical Care Nurses as Frontline Warriors During COVID-19 in Pakistan. *Connect: The World of Critical Care Nursing*, 13(4), 196-201
- [13]. Dinibutun, S. R. (2020). Factors Associated with Burnout Among Physicians: An Evaluation During a Period of COVID-19 Pandemic. *Journal of Healthcare Leadership*, 12, 85
- [14]. Lowes, H. (2020). From novice student to frontline care of COVID-19 patients in just 6 months. *British Journal of Nursing*, 29(10), 577-577
- [15]. Longmore, M., Manchester, A., & O'Connor, T. (2020). Holding the line on COVID-19. *Kai Tiaki: Nursing New Zealand*, 26(4), 14-15
- [16]. Woodhouse, F., & Yeung, T. (2020). Impact of COVID-19 on stoma care: the experience of one team in Oxford. *British Journal of Nursing*, 29(16), S4-S6
- [17]. Babore, A., Lombardi, L., Viceconti, M. L., Pignataro, S., Marino, V., Crudele, M., ... & Trumello, C. (2020). Psychological effects of the COVID-2019 pandemic: Perceived stress and coping strategies among healthcare professionals. *Psychiatry research*, 293, 113366
- [18]. Fraser, D. (2020). 2020: The Year of the Nurse and Midwife.
- [19]. Al-Mandhari, A., Gedik, F. G., Mataria, A., Oweis, A., & Hajjeh, R. (2020). 2020—the year of the nurse and midwife: a call for action to scale up and strengthen the nursing and midwifery workforce in the Eastern Mediterranean Region. *Eastern Mediterranean Health Journal*, 26(4), 370-371
- [20]. Rocklöv, J., & Sjödin, H. (2020). High population densities catalyse the spread of COVID-19. *Journal of travel medicine*, 27(3), taaa038
- [21]. Desai, A. N., & Patel, P. (2020). Stopping the spread of COVID-19. *Jama*, 323(15), 1516-1516
- [22]. Lee, A. (2020). Wuhan novel coronavirus (COVID-19): why global control is challenging?. *Public health*, 179, A1
- [23]. Buheji, M., & Ahmed, D. (2020). 'Lessons from the Front-Line' Facing the COVID-19 Pandemic. *Business Management and Strategy*, 11(1), 192-215
- [24]. Jackson, D., Bradbury- Jones, C., Baptiste, D., Gelling, L., Morin, K., Neville, S., & Smith, G. D. (2020). Life in the pandemic: Some reflections on nursing in the context of COVID- 19. *Journal of clinical nursing*.
- [25]. Labrague, L. J., & De los Santos, J. (2020). Fear of Covid- 19, psychological distress, work satisfaction and turnover intention among frontline nurses. *Journal of Nursing Management*
- [26]. Meghani, S., & Lalani, N. (2020). Critical Care Nurses as Frontline Warriors During COVID-19 in Pakistan. *Connect: The World of Critical Care Nursing*, 13(4), 196-201
- [27]. Liu, Q., Shen, D., Chen, S., & Liu, J. (2020). Supporting Frontline Nurses During the Fight Against COVID-19. *Journal of the American Psychiatric Nurses Association*, 1078390320946825

- [28]. Labrague, L. J., & De los Santos, J. A. A. (2020). COVID- 19 anxiety among front- line nurses: Predictive role of organisational support, personal resilience and social support. *Journal of nursing management*
- [29]. Peeri, N. C., Shrestha, N., Rahman, M. S., Zaki, R., Tan, Z., Bibi, S., ... & Haque, U. (2020). The SARS, MERS and novel coronavirus (COVID-19) epidemics, the newest and biggest global health threats: what lessons have we learned?. *International journal of epidemiology*
- [30]. Sinderewicz, E., Czelejewska, W., Jezierska-Wozniak, K., Staszkiwicz-Chodor, J., & Maksymowicz, W. (2020). Immune Response to COVID-19: Can We Benefit from the SARS-CoV and MERS-CoV Pandemic Experience?. *Pathogens*, 9(9), 739
- [31]. Chakraborty, C., Sharma, A. R., Bhattacharya, M., Sharma, G., & Lee, S. S. (2020). The 2019 novel coronavirus disease (COVID-19) pandemic: A zoonotic prospective. *Asian Pacific Journal of Tropical Medicine*, 13(6), 242
- [32]. Alzahrani, S. I., Aljamaan, I. A., & Al-Fakih, E. A. (2020). Forecasting the spread of the COVID-19 pandemic in Saudi Arabia using ARIMA prediction model under current public health interventions. *Journal of infection and public health*, 13(7), 914-919
- [33]. Fanelli, D., & Piazza, F. (2020). Analysis and forecast of COVID-19 spreading in China, Italy and France. *Chaos, Solitons & Fractals*, 134, 109761
- [34]. Lau, H., Khosrawipour, V., Kocbach, P., Mikolajczyk, A., Schubert, J., Bania, J., & Khosrawipour, T. (2020). The positive impact of lockdown in Wuhan on containing the COVID-19 outbreak in China. *Journal of travel medicine*, 27(3), taaa037
- [35]. Lubbe, W., ten Ham-Baloyi, W., & Smit, K. (2020). The integrative literature review as a research method: A demonstration review of research on neurodevelopmental supportive care in preterm infants. *Journal of Neonatal Nursing*

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