Postpartum Nurses' Adherence to Egypt's Ministry of Health Corona Virus Guidelines.

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Abstract

Background: *Postpartum women are at greater risk for viral infections, including COVID-19, due to the physiological and iatrogenic injuries inflicted upon the abdominal wall, as well as to the reproductive, genital, and urinary systems, which emerge during the process of childbirth. They are also susceptible to COVID-19 because of physiological changes in the respiratory system's anatomical structure and in the immune system* ***Objective:*** *To Assess postpartum nurses' adherence to Egypt's Ministry of Health Corona Virus Guidelines* ***Settings:*** *The research was conducted within the postpartum units of nine hospitals located in Alexandria Governorate* ***Subjects:*** *The study sample encompassed all postpartum nurses working at the nine hospitals (N=100).* ***Tools:*** *Two tools were employed for the purpose of data collection.* ***tool I****: Socio-demographic and Knowledge Assessment about the Coronavirus and its preventive measures questionnaire. This instrument comprises two parts:* ***Part 1****: Socio-demographic characteristics;* ***Part 2****: Knowledge assessment of postpartum nurses concerning the Coronavirus and its preventive Measures questionnaire.* ***tool II:*** *Adherence of nurses to the Egyptian Ministry of Health's Coronavirus Guidelines, Observational Checklist.* ***Results:*** *The study revealed that 72% of postpartum nurses adhered to the Coronavirus Guidelines established by the Egyptian Ministry of Health. Furthermore, 81% of the nurses exhibited good overall knowledge pertaining to COVID-19 and its preventive measures.* ***Conclusion:*** *A significant proportion of postpartum nurses demonstrated a commendable understanding of COVID-19. and its preventive measures however, knowledge gaps persist in crucial areas, particularly the steps of handwashing and the application of preventive measures in isolation scenarios. Furthermore, adherence to Egypt's Ministry of Health COVID-19 guidelines was generally satisfactory in several aspects. However, significant non-adherence was identified in critical practices, such as proper techniques for wearing and removing masks and gowns.* ***Recommendations****: these findings underscore the need for targeted training and reinforcement of infection prevention protocols to enhance adherence with essential safety measures.*

Keywords:

Postpartum, Nurses, Adherhance, Corona Virus, Egyptian Ministry of Health guidelines.

Introduction

In late 2019, a previous unidentified corona virus emerged from Wuhan, China, and expanded globally. On the beginning of 2020, the disease is officially named by WHO as COVID-19, an infectious diseas attributable to the SARS-CoV-2 virus. The initial clinical presentations of COVID-19 are primarily nonspecific; however, the majority of affected individuals exhibited symptoms such as fever, cough, sore throat, etc. Regrettably, the mortality rate associated with this virus ranged from approximately 10% to 15%. (World Health Organization [WHO], 2023)(Huang et al., 2020; Perlman, 2020).

COVID-19 can be transmitted between people by close contact; when respiratory droplets from an infected individual come into direct contact with the ocular, nasal, or oral cavities; the inhalation of infectious aerosols suspended in the atmosphere; or through contact with the ocular, nasal, or oral surfaces after handling contaminated objects (WHO,2021). Nevertheless, a standardized treatment regimen or an effective vaccine for COVID-19 remains unattainable. Consequently, it is imperative to diminish the risk of infection or the spread of the disease. (Wu et al., 2020).

Standard Precautions for COVID-19 are preventive measures implemented by healthcare staff to minimize the risk of transmitting microorganisms from both known and unknown infection sources. These universal precautions, as delineated by the Centers for Disease Control and Prevention (CDC), represent the minimum required steps for infection prevention. They include proper hand washing before and after patient contact, using appropriate protective equipment (e.g., gloves) prior to patient contact, covering the mouth and nose during coughing and sneezing, ensuring the safe handling and disposal of injections and sharp objects, and appropriately cleaning supplies and disposing of waste (Douedi & Douedi, 2022).

The postpartum period commences immediately following the delivery of the infant and persists for a duration of six weeks (42 days). (World Health Organization [WHO], 2020). It is a critical time for woman, newborn and family as a whole. Postpartum women are at greater risk for viral infections, including COVID-19, due to the physiological and iatrogenic injuries to the abdominal wall, in addition to the reproductive, genital, and urinary systems, which occur during the childbirth process. Postpartum mothers are particularly vulnerable to COVID-19 due to physiological changes in the respiratory system's anatomical structure and alterations in the immune system (Boushra & Rahman, 2023; Vale et al., 2021). The disease poses significant risks for both maternal and neonatal health. Postpartum mothers may experience a higher mortality rate due to severe Acute Respiratory Distress Syndrome (ARDS). Additionally, newborns are at risk of contracting COVID-19 during childbirth or through exposure to infected mothers or caregivers after delivery, as their immune systems are still immature (Scheler et al., 2021).

Healthcare professionals (HCPs), especially physicians and nurses, are the cornerstone of the healthcare system. Failure to protect them from exposure to COVID-19 negatively endangers their health and impacts their management of postpartum mothers. Therefore, the WHO guidelines for COVID-19 preventive measures among healthcare professionals encompass social distancing, the utilization of facial masks, and the frequent practice of hand hygiene, etc. In addition, prevention of COVID-19, while caring for postpartum mothers includes mother and child separation, infection prevention and control, breastfeeding, breast pump, postpartum

visits, and family planning (Salwa et al., 2022)**(**Benski et al., 2020; Latif et al., 2022).

The most efficacious approach that has contributed to the diminution of morbidity and mortality associated with COVID-19 across the global population encompasses adherence to and execution of various personal hygiene protocols, including hand hygiene, the wearing of masks, remaining at home, and sustaining social distancing practices. also necessary to protect HCP's and postpartum mothers and reduce the risk of cross-transmfion in the workplace. In addition, adherence of HCPs with COVID-19 prevention guidelines needs to be ensured to safeguard a functional health system by reducing the infection rates. Therefore, this study was conducted to assess postpartum Nurses' Adherence to Egypt's Ministry of Health Corona Virus Guidelines (Salwa et al., 2022) **(Zhong BL et al., 2020).**

Aims of the research:

To assess postpartum Nurses' Adherence to Egypt's Ministry of Health Corona Virus Guidelines.

Research question:

What is the level of postpartum nurses' adherence to Egypt's Ministry of Health Corona Virus Guidelines?

Materials and Methods

Materials

Design: A descriptive exploratory research design was implemented.

Settings: The research was conducted within the postpartum units of nine principal hospitals situated in Alexandria Governorate. namely:

1. EL-Shatby Maternity University Hospital united to Alexandria University.
2. Salah Al Awadi maternity hospital united to Health Insurance.
3. Dar El-Welada hospital (Maternitee) united to Health Care Organizations.
4. Dar Esmaeel hospital, Abo-Qeer hospital, Al Amriya hospital, El Gomhoreya Public hospital, Sharq El Madina hospital (Jihan hospital) and Al Qabbary hospital united to Ministry of Health.

Subjects: The study sample encompassed all postpartum nurses working at the previously mentioned hospitals (N=100).

Tools: Two tools were used for data collection.

Tool I:Socio-demographic and Knowledge Assessment about the Coronavirus and its preventive measures questionnaire. This tool was devised by the researcher subsequent to an extensive review of pertinent literature (World Health organization [WHO] & Ministry of Health and Population, 2020) &(Iss et al., 2020). It comprises two sections: **Part 1: Socio-demographic characteristics:** This section included data concerning age, marital status, educational attainment, and years of professional experience in postpartum units, position, training programs related to infection control.**Part 2: Post-partum nurses' knowledge about Corona virus and its preventive measures questionnaire.** This part comprised 35 items to assess postpartum nurses' comprehension of COVID-19 and its preventive measures.during postpartum period, including 13 questions about covid-19 origin, mode of transmission, incubation period, signs and symptoms, vulnerable groups, its effects on postpartum mothers, as well as 22 questions to assess nurses' knowledge about preventive measures. **Scoring System:** The total score ranged between (35-105) the scoring criteria for nurses is delineated as follows: Poor for a total score of < 58; Fair for a total score of 58 - < 81; Good for a total score of ≥ 81.

Tool II: Nurses' adherence to the Egyptian Ministry of Health's Coronavirus Guidelines, Observational Checklist: This tool was adapted by the researcher in accordance with the established guidelines of Egypt's ministry of health to assess nurses' adherence to corona virus guidelines. It included the preventive measures in 7 main groups namely: hand hygiene (N=10), personal protective equipment including putting on and taking off the facemask (N=11), wearing and removing gown (N= 6), wearing and removing gloves (N = 6), handling and disposal of linens (N=5), disposal of waste (N=3) and disinfection of isolation rooms (N=3). With a total of 44 items. **Scoring System:** The level of nurses' adherence is classified as: Not adherent for a total score of < 66 and Adherent for a total score of ≥ 66.

Method

-**Approval** for conducting the research was secured from the Research Ethics Committee at the Faculty of Nursing, Alexandria University, and formal permission was acquired from the university, subsequently conveyed to the pertinent authorities within the study settings to procure their consent for data collection after explaining the objectives of the study.

-**Tool (I)** was developed by the researcher subsequent to an extensive review of the existing relevant literature. while, **Tool (II)** was adopted by the researcher in accordance with the guidlines established by Egypt's Ministry of Health.

-**Content validity assessment:** The two instruments were presented to a panel of five experts in the field of obstetrics and gynecologic nursing, to ascertain the content validity, completeness, clarity of items, and the adequacy of translations.

-Reliability assessment: The reliability of the study tools was established by evaluating the internal consistency of the items employing Cronbach's Alpha test; (tool I yielded a coefficient of 0.864; tool II yielded a coefficient of 0.795).

-A pilot study was conducted involving 10 nursing professionals to evaluate the clarity and applicability of the study tools and to identify potential challenges that could arise during data collection, followed by necessary adjustments.

-Collect the data each nurse will be assessed her knowledge (tool I) and observed three times (using Tool II). Overt Observation was done during the morning or afternoon shifts for each nurse separately.

Ethical considerations:

Written informed consent was procured from each nursing participant after a comprehensive explanation of the study's objectives. The privacy and anonymity of the nursing participants were rigorously protected. The confidentiality of the data collected from each nurse was assured. The nurses were informed of their entitlement to withdraw from the study at any time.

Statistical Analysis

The gathered data were systematically coded, digitized, and analyzed utilizing the Statistical Package for Social Sciences (SPSS software package version 25). Qualitative data were articulated through numerical values and percentages. Quantitative data were characterized using range (minimum and maximum values), mean, and standard deviation. The significance of the results obtained was evaluated at the 5% significance level.

Results

Table 1: presents that the majority of postpartum nurses had an average age of 38.81 ± 8.52 years. Slightly more than two-thirds (68%) of them were married. Additionally, the majority (84%) held diploma degrees. Their years of experience

ranged from 1 to ≥30 years, with an average of 18.02 ± 9.46 years.

Table II: shows that postpartum nurses' overall knowledge about COVID-19 had a mean score of 62.7 ± 28.5 for correct and complete answers. Regarding knowledge specifically about preventive measures for COVID-19, the mean score was 52.7 ± 34.4 for correct and complete responses.

Figure (1): illustrates that the majority of postpartum nurses (81%) obtained a good total score of knowledge, while a minority of them (19%) got a fair total score.

Figure (2): The study evaluated postpartum nurses' adherence to various COVID-19 infection control measures, revealing varying levels of compliance. The percent adherence score for hand washing was 70%, while adherence to wearing and removing masks scored 61.5%. Nurses showed the highest adherence to wearing and removing gowns, with a percent score of 98.3%, followed by adherence to safely wearing and removing gloves, which had a percent score of 86.3%. Regarding handling and disposing of linens in isolation, the percent adherence score was 65.6%, while adherence to waste disposal scored 63.7%. Lastly, adherence to disinfecting isolation rooms showed a percent score of 77.7%, reflecting a moderate level of compliance.

Figure (3): illustrates that 72% of postpartum nurses adhered to the Coronavirus Guidelines set by Egypt's Ministry of Health.

Table (III): illustrates the relationship between postpartum nurses' adherence and their knowledge levels regarding infection control measures. Among the adherent nurses, 55% demonstrated good knowledge, while 17% had fair knowledge. Conversely, among the non-adherent nurses, 26% exhibited good knowledge, and only 2% had fair knowledge where p= 0.059 which suggests a borderline significant association between adherence and knowledge levels.

Discussion

The pandemic presents significant challenges for postpartum nurses, who form a critical part of the global healthcare workforce, comprising approximately 20 million professionals. Postpartum nurses must stay informed about WHO and Egyptian Ministry of Health guidelines to provide evidence-based care while minimizing infection risks (Elsabaa et al., 2022).

The findings of the present research indicated that slightly less than three-quarters of postpartum nurses revealed adherence with COVID-19 infection control guidelines. This aligns with the study conducted by Limenyande et al. (2023). Similarly, the research conducted by Lu et al. (2012). corroborates these findings. This investigation underscored self-reported behaviors pertinent to infection prevention and control (IPC) and scrutinized variations in adherence levels prior to and during the pandemic.

Furthermore, the current investigation unveiled that a substantial proportion of postpartum nursing professionals complied with hand hygiene protocols, which aligns with the findings of Elshaer and Agage (2022) in their study.Their research accentuated a notable degree of adherence among nursing personnel in conforming to hand hygiene standards.

The outcomes of the present study are congruent with numerous antecedent research initiatives, emphasizing the paramount significance of adherence to infection control measures, particularly in the utilization of personal protective equipment (PPE) such as surgical masks and gowns.

For instance, Elshaer and Agage (2022), in their study reported that a

substantial proportion of nurses demonstrated improved adherence to wearing surgical masks.

Regarding adherence to gown-wearing and removal protocols, the current study found a high overall adherence rate. Most nurses successfully donned sterile gowns and accessed designated removal areas without contamination. This finding aligns with those of Kidayu (2022) in the stu. Kidayu's scholarly investigation disclosed complete adherence among the respondents concerning the procedures for the donning and disposal of gowns, thereby suggesting a substantial level of compliance to infection prevention protocols among the nursing personnel.

Adherence among postpartum nurses to protocols for putting on and removing gloves was observed to be very satisfactory. In alignment with this finding, Kidayu (2022), in the study . indicated that all participants conformed to proper procedures regarding the donning and disposal of disposable gloves.

Regarding postpartum nurses' compliance with IPC protocols, specific adherence rates were observed: handling linens (about two-thirds), waste disposal (slightly less than two-thirds), and disinfection of isolation rooms (more than three-quarters). In agreement with the current study's findings, Kidayu (2022), in her research. determined that every participant adhered to the protocols for the segregation and separation of clean and contaminated linens within linen cribs. This finding exemplified a high degree of compliance with IPC protocols among nursing professionals at Kenyatta National Hospital.

With respect to waste disposal practices, the current study revealed that over half of the nurses categorized waste by type and placed it in appropriately colored bags, while two-thirds safely transferred waste to storage areas by the end of their shifts. Ashinyo et al. (2021), in their study about infection prevention and control adherence among healthcare workers in Ghana, also highlighted compliance with waste disposal and secure waste transfer protocols. However, Amanya et al. (2020) reported suboptimal adherence to IPC guidelines on waste management and linen segregation among healthcare workers in Uganda.

The current research findings emphasize the importance of continuous education, monitoring, and reinforcement of infection prevention protocols to maintain and enhance compliance among healthcare workers, particularly in high-risk settings like postpartum care units. This aligns with Shahin et al. (2023), who reported improved knowledge and preventive practices following nurse-led interventions, and Elshenawie et al. (2020), who observed significant improvements in nurses' knowledge, attitudes, and practices after an educational program. Additionally, Saleh et al. (2021) noted that adherence to administrative controls, such as early identification of acute respiratory infections, was a critical aspect of IPC compliance during the pandemic.

Concerning postpartum nurses' knowledge of COVID-19 and its preventive measures, this research indicated that a considerable majority attained a commendable total knowledge score, whereas a lesser proportion achieved moderate scores. These findings are consistent with Saha et al. (2020) in which revealed that approximately two-thirds of nurses exhibited proficient knowledge, while one-fifth demonstrated moderate knowledge pertaining to COVID-19. In a similar vein, Amanya et al. (2020), in their study observed that comprehensive knowledge of COVID-19 significantly bolstered healthcare workers' confidence in adhering to IPC guidelines.

In examining the relationship between postpartum nurses' collective

knowledge regarding COVID-19 and its preventive measures in relation to their socio-demographic characteristics, this study revealed no statistically significant association. This finding stands in contrast to the conclusions drawn by Saleh et al. (2021) in their investigation established a statistically significant correlation between healthcare workers' adherence to infection prevention and control measures and variables such as age and years of professional experience. They argued that age and experience enhance competencies in decision-making, supported by foundational knowledge, responsibility, and cognitive abilities. Furthermore, work environment and professional trajectory influence decision-making processes, including problem-solving, judgment, and memory, which are critical for managing protective measures effectively.

The current study demonstrates that younger nurses and healthcare workers possessed a greater level of knowledge about personal protective equipment (PPE), corroborating findings from Wang et al. (2020) in their study. However, no significant correlation was found between healthcare workers' adherence to infection prevention and control measures and gender, consistent with Yassi et al. (2007), which explored determinants impacting healthcare workers' compliance with infection control protocols.

The current study highlights a gap between the knowledge and adherence scores of postpartum nurses regarding specific items of standard precautions. Despite moderate or poor knowledge, adherence to practices remains strong due to several factors. Governments, organizations, and healthcare facilities have implemented strict mandates, such as mask-wearing, hand hygiene, and physical distancing, promoting compliance through enforcement rather than understanding. Social influences and societal expectations also drive preventive practices, as individuals often mimic observed behaviors. Public health campaigns deliver clear, actionable messages, reinforced through media, posters, and announcements, ensuring adherence even without in-depth knowledge.

Conclusion

The majority of postpartum nurses displayed a good level of knowledge regarding COVID-19 and its preventive measures. however, knowledge gaps persist in crucial areas, particularly the steps of handwashing and the application of preventive measures in isolation scenarios. Furthermore, adherence to Egypt's Ministry of Health COVID-19 guidelines was generally satisfactory in several aspects. However, significant non-adherence was identified in critical practices, such as proper techniques for wearing and removing masks and gowns. These findings underscore the need for targeted training and reinforcement of infection prevention protocols to enhance compliance with essential safety measures.

Recommendations

-The Ministry of Health, in collaboration with infection control teams, should: Ensure COVID-19 guidelines are clearly visible and accessible at critical points within maternity wards.

-Develop and deliver targeted training sessions focusing on handwashing techniques, proper mask-wearing and removal, and managing isolation protocols.

-Policymakers, such as head nurse managers and nursing supervisors, should: Implement periodic assessments and provide feedback mechanisms to ensure continuous compliance.

Table (I): Number and percent distribution of postpartum nurses according to their socio-demographic characteristics

Socio-demographic characteristics	No (100)	%
Age:		
22-	**26**	**26.0**
35-	**46**	**46.0**
45-55	**28**	**28.0**
Min – Max	**22 – 55**	
Mean ± SD	**38.81 ± 8.52**	
Marital status:		
- Married	**68**	**68.0**
- Single	**24**	**24.0**
- Divorced & widowed	**8**	**08.0**
Nursing education:		
- Diploma	**84**	**84.0**
- Bachelor	**14**	**14.0**
- Master	**2**	**02.0**
Position:		
- Practical nurse	**45**	**45.0**
- Technical	**38**	**38.0**
- Specialist	**10**	**10.0**
- Supervisors	**7**	**07.0**
Years of experience in nursing:		
<10	**19**	**19.0**
10-	**31**	**31.0**
20-	**40**	**40.0**
≥ 30	**10**	**10.0**
Min – Max	**1 – 36**	
Mean ± SD	**18.02 ± 9.46**	
Years of experience in postpartum:		
<10	**39**	**39.0**
10-	**41**	**41.0**
20-	**14**	**14.0**
≥ 30	**6**	**06.0**
Min – Max	**1 – 35**	
Mean ± SD	**11.74 ± 8.61**	
Attending training program/s about infection control:		
- Yes (Infection control)	**89**	**89.0**
- No	**11**	**11.0**

Table (II): Distribution of postpartum nurses according to their knowledge about Covid-19 and its preventive measures.

Postpartum nurses' knowledge	Correct & complete	Correct, but incomplete	Incorrect or don't know
Postpartum Nurses' Knowledge about Covid-19 Mean & SD	62.7± 28.5	29.1 ± 31.8	8.1 ± 11.9
postpartum nurses according to their knowledge about preventive measures of Covid-19 Mean & SD	52.7 ± 34.4	33.4 ± 35.6	13.9 ± 23.4

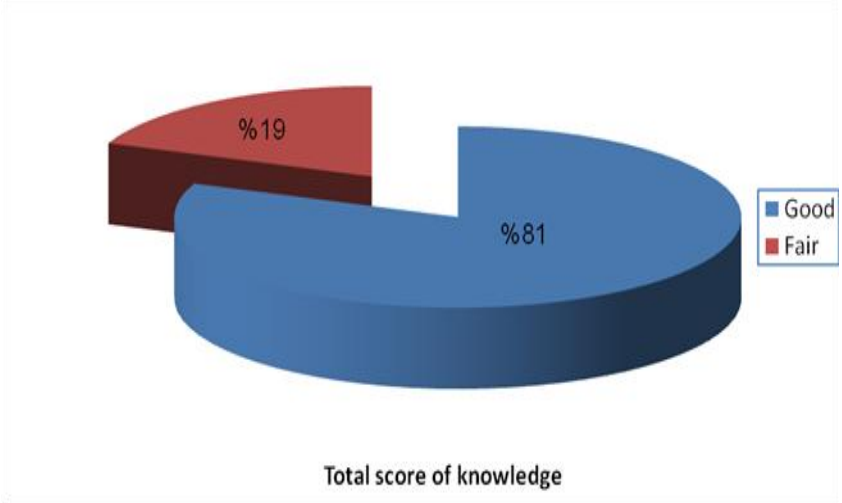

Figure (1): Percent distribution of postpartum nurses according to their total score of knowledge about Covid-19 and its preventive measures

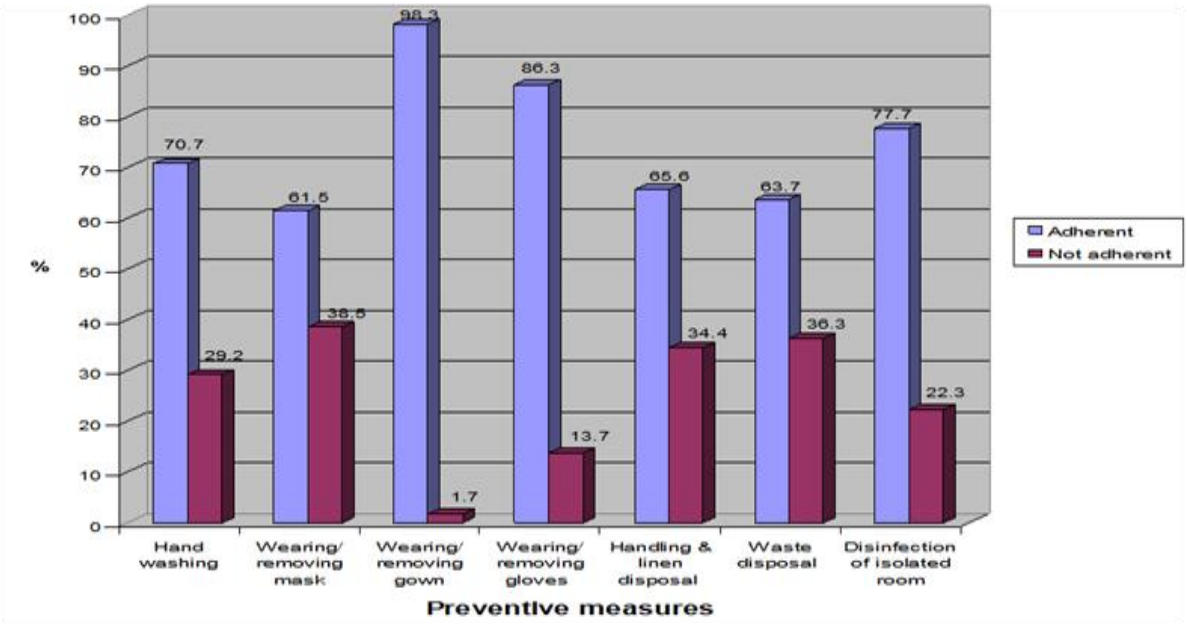

Figure (2): Percent distribution of postpartum nurses according to their adherence to Egypt's ministry of health Corona virus guideline

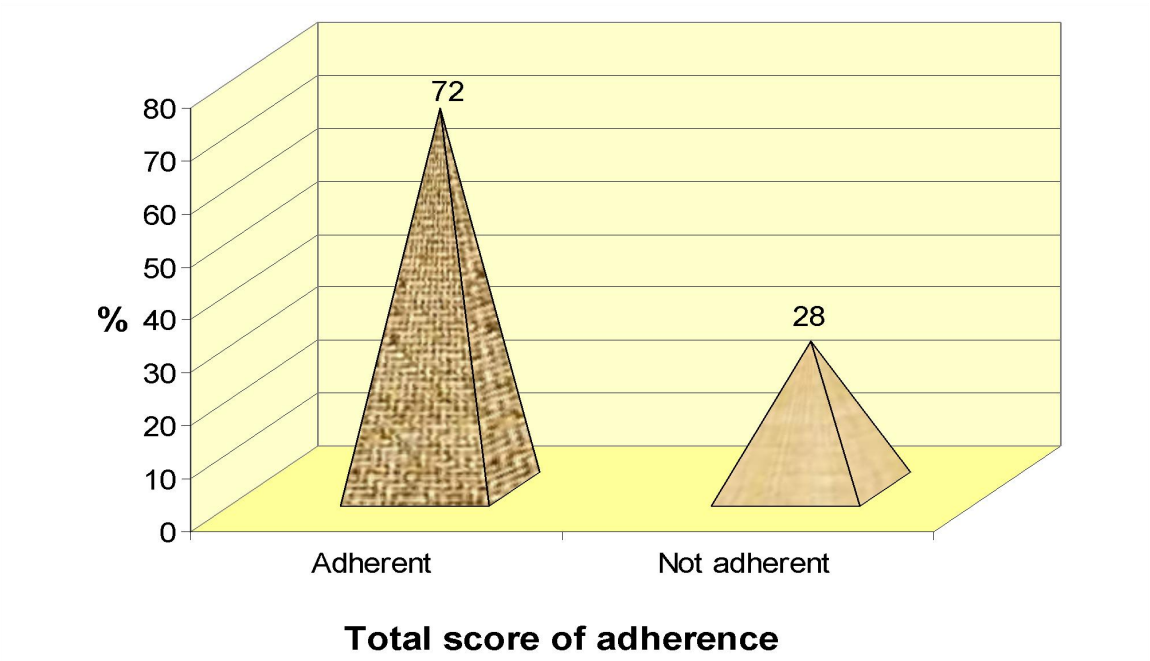

Figure (3): Percent distribution of postpartum nurses according to their total score of adherence to Egypt's ministry of health Corona virus guideline

Table (III): Relationship between postpartum nurses' total score of knowledge and total score of adherence

Total score of adherence	Total score of knowledge				F / χ^2(P)
	Good		Fair		
	No	%	No	%	
Adherent	55	55.0	17	17.0	3.553 (0.059)
Not adherent	26	26.0	2	02.0	

χ^2(P): Chi-Square Test &P for χ^2 Test
F (P): Fisher Exact test &P for F Test
*: Significant at P ≤0.05

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