



## Nasal and Hands Carriage Rate of Methicillin-Resistant *Staphylococcus aureus* among Health Care Workers at Alwahda Hospital, Derna

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Received: 19 August 2019/ Accepted: 30 December 2019

Doi: <https://doi.org/10.54172/mjsc.v34i4.166>

**Abstract:** Increasing incidence of Methicillin-Resistant *Staphylococcus aureus* (MRSA) is a well-documented healthcare and community phenomenon of concern to medical and public health communities all over the world. One of the most important sources of MRSA infection in hospitals is health care workers (HCWs) through nasal or hands carriage. The aim of this study is to determine the rate of methicillin-resistant *Staphylococcus aureus* among HCWs. A cross-sectional study involving 102 HCWs was conducted at Alwahda hospital, Derna. Nasal and hand swabs were collected and cultured on Mannitol Salt Agar. Gram staining was performed on mannitol fermenting colonies. Slide catalase and coagulase were performed to identify *S. aureus*. An oxacillin and cefoxitin susceptibility test was carried out on Muller Hinton agar using the modified Kirby-Bauer disc diffusion method. Results: out of 102 healthcare workers, 46 (45.1%) carried *S. aureus*. The rate of methicillin resistance amongst all *S. aureus* isolates was 47.8 % (22/46) whereas 21.6 % (22/102) of all HCWs were identified as MRSA carriers. Nurses had the highest MRSA carriage with 53%, compared to other HCW. On the other hand, the highest rate of MRSA (75%) was seen in CCU workers followed by workers of pediatric and surgical wards (66%, 62% respectively). The high rate of nasal and hand MRSA carriage among healthcare workers, especially in high-risk wards, indicates the imperfection of infection control measures in our hospitals and the necessity to improve the infection control program.

**Keywords:** *healthcare workers; nasal carriage; hand carriage; S. aureus, MRSA*

### INTRODUCTION

*Staphylococcus aureus* is a common commensal organism on human skin and mucosa mainly the anterior nares (Khanal et al. 2015; Lewis and Ellis 2007; Vandenesch et al. 2003) with up to 20%–30% of humans persistently colonized and 50%–60% intermittently colonized (Brooks et al. 2013). Moreover, the prevalence of 25% was found among hospital personnel (Haddadin, et al 2002). Also, the increased incidence rate of MRSA isolates

that are resistant to all currently available  $\beta$ -lactam antibiotics is a well-documented healthcare and community phenomenon of tremendous concern to medical and public health communities around the world (Lewis and Ellis 2007).

Moreover, MRSA is endemic in many hospitals throughout the world and 50-60% of patients are merely colonized with MRSA (Shopsin et al. 2000). Excessive antibiotic usage, prolonged hospitalization, intravascular catheterization and hospitalization in the

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intensive care unit are factors which contribute to MRSA (Anupurba. et al. 2003). In fact, there are three main reservoirs for MRSA in hospitals; staff, patients and inanimate objects such as beds and linens (Batabyal, et al. 2012; Hujier, And Saleem, 2008), but colonized patients are the main reservoir of MRSA (Lewis and Ellis 2007). They frequently shed MRSA, resulting in contamination of their skin, clothing, bedding, and nearby environmental surfaces (Cadnum et al. 2009; Stiefel et al. 2011).

Besides that, HCWs may carry MRSA in their noses or on their hands (usually transient carriage) following either direct or indirect contact with asymptomatic carriers or patients who have a clinical infection (Evans et al. 2008; Morgan et al. 2012). In addition, they may get infected through contact with the environment. They may then, unknowingly transmit the organism to their patients (Alruaily and Khalil 2011; Shiomori, et al 2001). Furthermore, even if medical staff correctly washes their hands, contact with contaminated environmental surfaces reduces the cleanliness of the fingers. The hands of HCWs were recognized as vectors in staphylococcal transmission as early as the 1960s (Cadnum et al. 2009; Khanal et al. 2015). The imperfect compliance with hand hygiene procedures play an important role in HCWs colonization and contribute to a high incidence of MRSA (Plipat et al. 2013). The HCWs with different kinds of occupations are all at risk to receive or mediate MRSA in the hospital.

In most countries, the percentage of MRSA in hospitals is now higher than 20%. Percentages greater than 50% are even reported in some countries (Blomquist 2006). Therefore, control of infections, screening of HCWs, and eradication of colonization may thus need to be considered (Rahbar, et al 2006). As MRSA is a major cause of healthcare-associated infections, the detection of MRSA carriers within HCWs is vital to decrease the

incidence of these infections. Our study aims to screen the MRSA colonization among HCWs in Alwahda hospital, Derna.

## MATERIALS AND METHODS

The study was carried out in AlWahda Hospital, Derna, Libya during the period of November – December 2013. A cross-sectional study was conducted on a total of 102 HCWs including; 63 hand swabs and 39 nose swabs.

**Nasal and hands swab collection:** Between 8 AM to 9 AM, nasal swabs were collected from anterior nares and hands of the HCWs using sterile cotton swabs (moistened with normal saline). The swabs were then immediately transported to the Microbiology laboratory for further processing (Cheesbrough 2006).

**Culture and identification:** Specimens were inoculated on blood agar and chocolate agar aerobically at 35°C for 24 hours. Suspected colonies of *S. aureus* were tested by Gram stain, catalase test, and coagulase test. Gram-positive cocci which were catalase and coagulase-positive were inoculated on Mannitol salt agar (MSA) aerobically at 35°C for 24 hours (Betty, et al 2007).

**Antibiotic susceptibility test:** Antibiotic susceptibility testing of all isolates against two types of antibiotics oxacillin and cefoxitin by using the disc diffusion method in accordance with the British Society for BSAC (Andrews and Bsac 2008). Oxacillin 1µg (Oxoid Antimicrobial Susceptibility Test Discs, Basingstoke, UK) was used to identify MRSA, in addition, the cefoxitin (second-generation cephalosporins) 30µg (Oxoid Antimicrobial Susceptibility Test Discs, Basingstoke, UK) was used for assisting in the determination of oxacillin resistance in *staphylococci*. *S. aureus*. Strains which grow and form zone diameter  $\leq 10$ mm around oxacillin, and  $\leq 14$  around cefotixin, were classified as methicillin-resistant. The strains which grow

and form zone diameter  $\geq 13$ mm around oxacillin and  $\geq 18$  around cefotixin, were classified as susceptible (CLSI 2015).

Data were analyzed using SPSS 17.0.

## RESULTS

**Demographic Information of HCWs:** The distributional pattern of demographic information of HCWs is shown in Table 1. As can be seen, the highest percentage of MRSA was observed in the age group 40-49 years (60%), and males had a higher carriage rate (53%) of MRSA than females (45.2%).

**Table: 1.** Demographic Information of Respondents

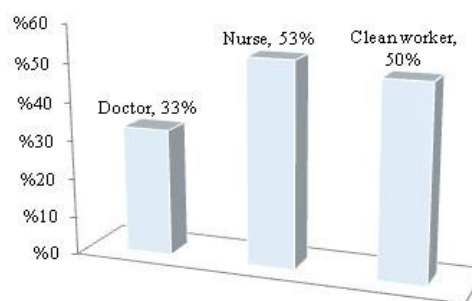
Demographic characteristics	<i>S. aureus</i> (n= 46)	MRSA (n= 22)	
		Frequency	%
Age group			
20-29	17	8	47.1
30-39	23	11	47.8
40-49	5	3	60
50-59	1	0	0.00
Gender			
Male	15	8	53.3
Female	31	14	45.2
Profession			
Doctors	12	4	33.33
Nurses	28	15	53.6
Others	6	3	50

**Nasal and hand Carriage Rate of *S. aureus* and MRSA:** Of 102 screening sample, *S. aureus* isolates were 46 (45.1%) which were isolated from (26 hands, 20 noses), of them 22 (47.8%) were MRSA, giving an overall positivity rate of 21.6 % (22/102) as shown in table 2. The distribution of MRSA carriage according to HCW duties is presented in fig 1. MRSA carriage was particularly high amongst nurses (53%), and cleaners (50%). On the other hand, the highest rate of MRSA carriers (75%) were HCWs in CCU followed by pediatrics and surgery, (66% and 62% respectively) (fig 2).

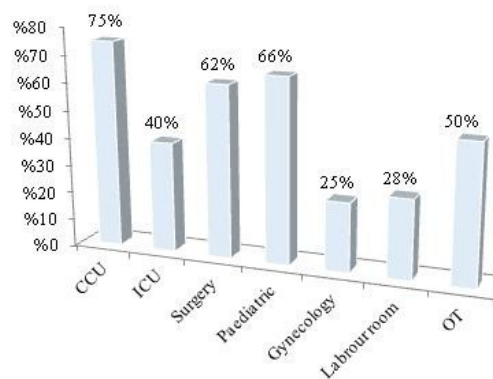
**Table: (2).** Distribution of *S. aureus* and MRSA in noses and hands of HCWs

Specimen positive in	Sample frequency	No. of positive HCWs (%)	
		<i>S. aureus</i>	MRSA
Nose	39	20 (19.6)	7 (6.9)
Hands	63	26 (25.5)	15 (14.7)
Total	102	46 (45.1)	22 (21.6)

HCWs= health care workers



**Figure (1).** Distribution of MRSA in Alwhda, Derna HCWs according to the duties



**Figure: (2).** Distribution of MRSA in hand and nose of HCWs according to hospital wards

## DISCUSSION

*S. aureus* is one of the most common causes of serious infection in the community and hospitals. It is a bacterium that is naturally present with the human and is found as normal flora on the skin and anterior nares. The HCWs carriage percentage of *S. aureus* has been reported to be 45.1% and that of MRSA

has been shown to be 21.6%. In our study, the nasal and hand carriage rate of *S. aureus* was found to be 6.9% and 14.7% respectively. This finding was similar to previous studies from Tripoli, Libya (Ahmed et al. 2012). Lower rates were reported internationally from Nepal (3.4%), Ethiopia (12.7%), and Iran (13.9%, 4.6%,) (Jannati et al. 2013; Khanal et al. 2015; Rahbar, et al 2006; Shibabaw, et al 2013). Furthermore, The rate of MRSA among the HCWs carrying *S. aureus*, 47.8 % (22/ 46), is higher than the 39% reported by Zorgani AA., et al in Libya (Zorgani et al. 2009) but it is lower than that reported from Iran, Nepal and Ethiopia (21.9 %, 35%, and 44.1%) (Khanal et al. 2015; Rahbar, et al 2006; Shibabaw, et al 2013).

The differences in the carriage rate of MRSA between different studies can be attributed to variations in sampling techniques, culturing, and identification methods of MRSA. In addition, local infection control standards and the local prevalence of MRSA are important factors.

The relatively high MRSA rate in this study could be a reflection of weak compliance of HCWs with basic infection control measures; the most important of which is the hand hygiene practices. During the study, we observed that most of the medical staff were ignoring hand washing. In addition, we could not observe perfect cleaning procedures of the patient rooms, although, in some wards, the routine is to disinfect using 70 % alcohol once a week after patient discharge, which is neither perfect nor enough for sterilization of the surfaces.

Unknown carriers between patients may introduce MRSA into the hospital environment and transmit it to other patients, mainly via the transiently colonized hands of hospital staff. In order to prevent the detection of transient, short term MRSA hand carriage that may occur during a work shift Zuschneid et al. suggested that screening of HCWs

hands should be performed before starting work duties (Zuschneid et al. 2006). This was not done in our study, where the samples were taken after the person had already started their work.

The carriage rate for *S. aureus* and MRSA differed for various professional groups. In our study; nurses were observed to have the highest colonization rate (53%) compared with other HCWs. Nurses were the most commonly colonized HCWs in other studies (Khanal et al. 2015; Rahbar, et al 2006; Shibabaw, et al 2013) although the rates obtained were far lower than our rates (7.8 %, 21.2 %, 12.9% respectively). One study has shown a higher rate of 64% amongst nurses (Askarian et al. 2009). Nurses that had a high colonization with MRSA may be attributed to their frequent contact with patients, weak experience in taking care of patients, and weak attention to the infection control policies, and most importantly, the ignorance of frequent hand washing.

Although MRSA was isolated from HCWs in all hospital wards, the prevalence of MRSA was high among the HCWs in the CCU (75%) followed by pediatric and surgical wards (66, 62 respectively). The CCU department is a site of high healthcare worker-patient contact, potentially substantial crowding, especially with a limited number of hospitals in our region; perhaps that explains the high colonization rate seen in the CCU HCWs. A much less prevalence (24%) has been shown in another study (Al-Talib et al. 2013).

Additionally, HCWs of surgical wards have the second higher rate in our study (66%), and this was higher than other countries 57.1%, 28.6 % in Nepal and Ethiopia respectively (Khanal et al. 2015; Shibabaw, et al 2013). Nevertheless, numerous studies revealed that the rate of MRSA is highest in HCWs of surgical wards (Askarian et al. 2009; Khanal et al. 2015; Shibabaw, et al

2013; Zuschneid et al. 2006). As a consequence of HCWs having a high carriage of MRSA, the chances of transmission of the organism to patients during patient-care are highly suspected. As 62% of the isolates belonged to HCWs from the surgical ward, the vulnerability of surgical wound to infection with MRSA among the patients, following transmission from the HCWs, could explain the high rate of post-surgical wound infections that complicate and delayed postoperative recovery. The high carriage rate in the surgical ward in our study necessitates the implication of highly sophisticated infection control measures in order to prevent transmission to vulnerable operated patients.

In contrast to high rates in CCU and Surgical wards, the gynecology department has the lowest rate of MRSA carriage (25%), the same finding was revealed by (Shibabaw, et al 2013). Within MRSA carriers, the highest rate was observed in the age group 40-49 (60%), while in a study by Shibabaw *et al*, the highest rate was recorded in the age group 20 to 29 years (Shibabaw, et al 2013). The increased rates of MRSA colonization among HCWs have important implications since HCWs may serve as a vector of cross-transmission to patients and may introduce the pathogen into their communities. Thus, the HCWs are not only a source but also a vector or a victim of MRSA infection (Albrich and Harbarth 2008).

Numerous studies proved that screening for nasal carriers of HCWs is very effective in controlling the spread of MRSA within different wards in hospitals since the nares and the anterior nares are important sources of MRSA (Albrich and Harbarth 2008; Cesur and Cokça 2004).

## CONCLUSION

The present study indicates a high carriage rate of MRSA (47.8%) among HCWs carrying *S. aureus*. The carriage rate was high in

nurses and HCWs in CCU wards. The high MRSA rate in this hospital necessitates the implementation of a protocol to control the risk of nosocomial MRSA, such as routine screening of HCWs for MRSA, susceptibility testing of isolates obtained, and education about basic infection control measures especially hand washing and disinfection. In addition, temporary layoff for colonized staff, isolation of colonized and infected patients should be taken to control the spread of MRSA infection.

## REFERENCES

- Ahmed, M., Elramalli, A., Amri, S., Abuzweda, A., & Abouzeed, Y. M. (2012). Isolation and screening of methicillin-resistant Staphylococcus aureus from health care workers in Libyan hospitals. *EMHJ-Eastern Mediterranean Health Journal*, 18 (1), 37-42, 2012.
- Al-ruaily, Meshref Awad, and Omer Mohamed Khalil. (2011). "Detection of ( Meca ) Gene in Methicillin Resistant Staphylococcus Aureus ( MRSA ) at Prince A / Rhman Sidery Hospital , Al-Jouf , Saudi Arabia." *Journal of Medical Genetics*.
- Al-Talib, H., Yean, C. Y., Hasan, H., Nik Zuraina, N., & Ravichandran, M. (2013). Methicillin-resistant Staphylococcus aureus nasal carriage among patients and healthcare workers in a hospital in Kelantan, Malaysia. *Polish Journal of Microbiology*, 62(1), 109-112.
- Albrich, Werner C., and Stephan Harbarth. (2008). "Health-Care Workers: Source, Vector, or Victim of MRSA?" *The Lancet Infectious Diseases*.
- Andrews, J M, and Bsc Working Party on Susceptibility Testing. (2008). "BSAC Standardized Disc Susceptibility Testing Method (Version 7)." *J Antimicrob Chemother*.

- Anupurba, S., Sen, M., Nath, G., Sharma, B., Gulati, A., & Mohapatra, T. (2003). Prevalence of methicillin resistant *Staphylococcus aureus* in a tertiary referral hospital in eastern Uttar Pradesh. *Indian journal of medical microbiology*, 21(1), 49.
- Askarian, M., Zeinalzadeh, A., Japoni, A., Alborzi, A., & Memish, Z. A. (2009). Prevalence of nasal carriage of methicillin-resistant *Staphylococcus aureus* and its antibiotic susceptibility pattern in healthcare workers at Namazi Hospital, Shiraz, Iran. *International Journal of Infectious Diseases*, 13(5), e241-e247.
- Batabyal, B, Kundu GKR, and S Biswas. (2012). "Methicillin-Resistant *Staphylococcus Aureus*: A Brief Review ." *I Res J Biological Sci*.
- Betty, A., A. Daniel, and W. Alice. (2007). *Diagnostic Microbiology*. 12th ed. St Louis, United State: Elsevier - Health Sciences Division.
- Blomquist, Preston Howard. (2006). "Methicillin-Resistant *Staphylococcus Aureus* Infections of the Eye and Orbit (an American Ophthalmological Society Thesis)." *Transactions of the American Ophthalmological Society*.
- Brooks, G., K. C. Carroll, J. Butel, and S Morse. (2013). *Jawetz, Melnick, & Adelberg's Medical Microbiology*. 26th ed. New York: McGraw Hill Professional.
- Chang, S., Sethi, A. K., Eckstein, B. C., Stiefel, U., Cadnum, J. L., & Donskey, C. J. (2009). Skin and environmental contamination with methicillin-resistant *Staphylococcus aureus* among carriers identified clinically versus through active surveillance. *Clinical infectious diseases*, 48(10), 1423-1428.
- Cesur, Salih, and Fügen Cokça. (2004). "Nasal Carriage of Methicillin-Resistant *Staphylococcus Aureus* among Hospital Staff and Outpatients." *Infection control and hospital epidemiology*.
- Cheesbrough, Monica. (2006). *District Laboratory Practice in Tropical Countries*. 2nd ed. New York: Cambridge University Press.
- CLSI. (2015). Vol. 35 No. 3 *CLSI Performance Standards for Antimicrobial M100-S23*.
- Evans, R. Scott et al. (2008). "Rapid Identification of Hospitalized Patients at High Risk for MRSA Carriage." *Journal of the American Medical Informatics Association*.
- Haddadin, A., S. Fappiano, and P. Lipsett. (2002). "Methicillin-Resistant *Staphylococcus Aureus* (MRSA) in the Intensive Care Unit." *Postgraduate medical journal* 78(921): 385-92.
- Hujier, Abu, and Niddal Saleem. (2008). "Detection of Methicillin-Resistant *Staphylococcus Aureus* in Nosocomial Infections in Gaza Strip." *African Journal of Microbiology Research* 2(9): 235-41.
- Jannati, E., Arzanlou, M., Habibzadeh, S., Mohammadi, S., Ahadi, P., Mohammadi-Ghalehbin, B., Dogaheh, H. P., Dibah, S., & Kazemi, E. (2013). Nasal colonization of *mecA*-positive, oxacillin-susceptible, methicillin-resistant *Staphylococcus aureus* isolates among nursing staff in an Iranian teaching hospital. *American journal of infection control*, 41(11), 1122-1124.
- Lewis, James S., and Michael W. Ellis. (2007). "Approaches to Serious Methicillin-

- Resistant Staphylococcus Aureus Infections with Decreased Susceptibility to Vancomycin: Clinical Significance and Options for Management.” *Current Opinion in Infectious Diseases*.
- Morgan, D. J., Rogawski, E., Thom, K. A., Johnson, J. K., Perencevich, E. N., Shardell, M., Leekha, S., & Harris, A. D. (2012). Transfer of multidrug-resistant bacteria to healthcare workers' gloves and gowns after patient contact increases with environmental contamination. *Critical care medicine*, 40(4), 1045.
- Plipat, Nottasorn, Ian H. Spicknall, James S. Koopman, and Joseph N.S. Eisenberg. (2013). “The Dynamics of Methicillin-Resistant Staphylococcus Aureus Exposure in a Hospital Model and the Potential for Environmental Intervention.” *BMC Infectious Diseases*.
- Rahbar, Mohammed, Mohammed Karamiyar, and Rassol Gra-Agaji. (2006). “Nasal Carriage of Methicillin-Resistant Staphylococcus Aureus Among Healthcare Workers of an Iranian Hospital.” *Infection Control & Hospital Epidemiology* 24(04): 236–37.
- Shibabaw, Agumas, Tamrat Abebe, and Adane Mihret. (2013). "Nasal Carriage Rate of Methicillin-Resistant Staphylococcus Aureus among Dessie Referral Hospital Health Care Workers; Dessie, Northeast Ethiopia." *Antimicrobial Resistance and Infection Control*.
- Shiomori, T., H. Miyamoto, and K. Makishima. (2001). “Significance of Airborne Transmission of Methicillin-Resistant Staphylococcus Aureus in an Otolaryngology-Head and Neck Surgery Unit.” *Archives of Otolaryngology - Head and Neck Surgery*.
- Shopsin, B., Mathema, B., Martinez, J., Ha, E., Campo, M., Fierman, A., Krasinski, K., Kornblum, J., Alcabes, P., & Waddington, M. (2000). Prevalence of methicillin-resistant and methicillin-susceptible Staphylococcus aureus in the community. *The Journal of infectious diseases*, 182(1), 359-362.
- Stiefel, U., Cadnum, J. L., Eckstein, B. C., Guerrero, D. M., Tima, M. A., & Donskey, C. J. (2011). Contamination of hands with methicillin-resistant Staphylococcus aureus after contact with environmental surfaces and after contact with the skin of colonized patients. *infection control and hospital epidemiology*, 32(2), 185-187.
- Vandenesch, F., Naimi, T., Enright, M. C., Lina, G., Nimmo, G. R., Heffernan, H., Liassine, N., Bes, M., Greenland, T., & Reverdy, M.-E. (2003). Community-acquired methicillin-resistant Staphylococcus aureus carrying Panton-Valentine leukocidin genes: worldwide emergence. *Emerging infectious diseases*, 9(8), 978.
- Vonberg, R.-P., Stamm-Balderjahn, S., Hansen, S., Zuschneid, I., Rüden, H., Behnke, M., & Gastmeier, P. (2006). How often do asymptomatic healthcare workers cause methicillin-resistant Staphylococcus aureus outbreaks? A systematic evaluation. *Infection Control & Hospital Epidemiology*, 27(10), 1123-1127.
- Zorgani, A., Elahmer, O., Franka, E., Grera, A., Abudher, A., & Ghenghesh, K. (2009). Detection of methicillin-resistant Staphylococcus aureus among healthcare workers in Libyan hospitals. *Journal of Hospital Infection*, 73(1), 91-92.

## معدل حمل الأنف واليدين للمكورات العنقودية الذهبية المقاومة للميثيسيلين بين عمال الرعاية الصحية في مستشفى الوحدة، درنة

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تاريخ الاستلام: 19 أغسطس 2019 / تاريخ القبول: 30 ديسمبر 2019

<https://doi.org/10.54172/mjsc.v34i4.166>:Doi

**المستخلص:** تعتبر زيادة حالات المكورات العنقودية الذهبية المقاومة للميثيسيلين (MRSA) من ظواهر الرعاية الصحية والمجتمعية الموثقة جيداً وتثير اهتمام المجتمعات الطبية والرعاية الصحية العامة في جميع أنحاء العالم. أحد أهم مصادر عدوى MRSA في المستشفيات هو عمال الرعاية الصحية (HCWs) من خلال حمل هذه البكتيريا عن طريق الأنف أو الأيدي. لذلك كان الهدف من هذه الدراسة هو تحديد معدل المكورات العنقودية الذهبية المقاومة للميثيسيلين بين عمال الرعاية الصحية. أجريت دراسة مستعرضة شملت 102 من العاملين في مجال الرعاية الصحية في مستشفى الوحدة درنة. حيث تم جمع المسحات من أنوف وأيدي العاملين وزرعها على أجار المانيتول الملحي. وبعد عزل البكتيريا وعمل الاختبارات الكيموحيوية لتعريف المكورات العنقودية الذهبية، تم إجراء اختبار الحساسية للمضادات الحيوية الأوكساسيلين وسيفوكسيتين على أجار المولر هينتون باستخدام طريقة الأقراص المنتشرة. حيث أظهرت النتائج إنه من بين 102 من العاملين في مجال الرعاية الصحية، 46 (45.1%) كانوا حاملين للمكورات العنقودية الذهبية. وكان معدل مقاومة الميثيسيلين بين المكورات العنقودية الذهبية 47.8% (46/22) بينما 21.6% (102/22) من كل العاملين في مجال الرعاية الصحية وبالتالي هم حاملون للمكورات العنقودية الذهبية المقاومة للميثيسيلين. نسبة الحاملين للمكورات العنقودية الذهبية المقاومة للميثيسيلين كانت أعلى بين الممرضات بنسبة (53%). وكان أعلى معدل للمكورات العنقودية الذهبية المقاومة للميثيسيلين بين العاملين في عناية القلب المركزة (75%) يتبعها العاملون في أقسام الأطفال والجراحة (66% - 62%) على التوالي. ارتفاع معدل حملي المكورات العنقودية الذهبية المقاومة للميثيسيلين في اليد والأنف للعاملين في مجال الرعاية الصحية خاصة في الأقسام العالية الخطورة يشير إلى النقص في السيطرة علي العدوي في مستشفياتنا، والحاجة لتحسين برامج مكافحة العدوى.

**الكلمات المفتاحية:** عمال الرعاية الصحية، حمل الأنف، حمل اليدين، المكورات العنقودية الذهبية المقاومة للميثيسيلين