



METHICILLIN-RESISTANT *Staphylococcus aureus* OCCURRENCE ON MOBILE PHONES: KNOWLEDGE, ATTITUDES, PRACTICES, AND ITS TRANSMISSION AMONG HEALTHCARE INTERNS IN DUMAGUETE CITY



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RES-173

ABSTRACT

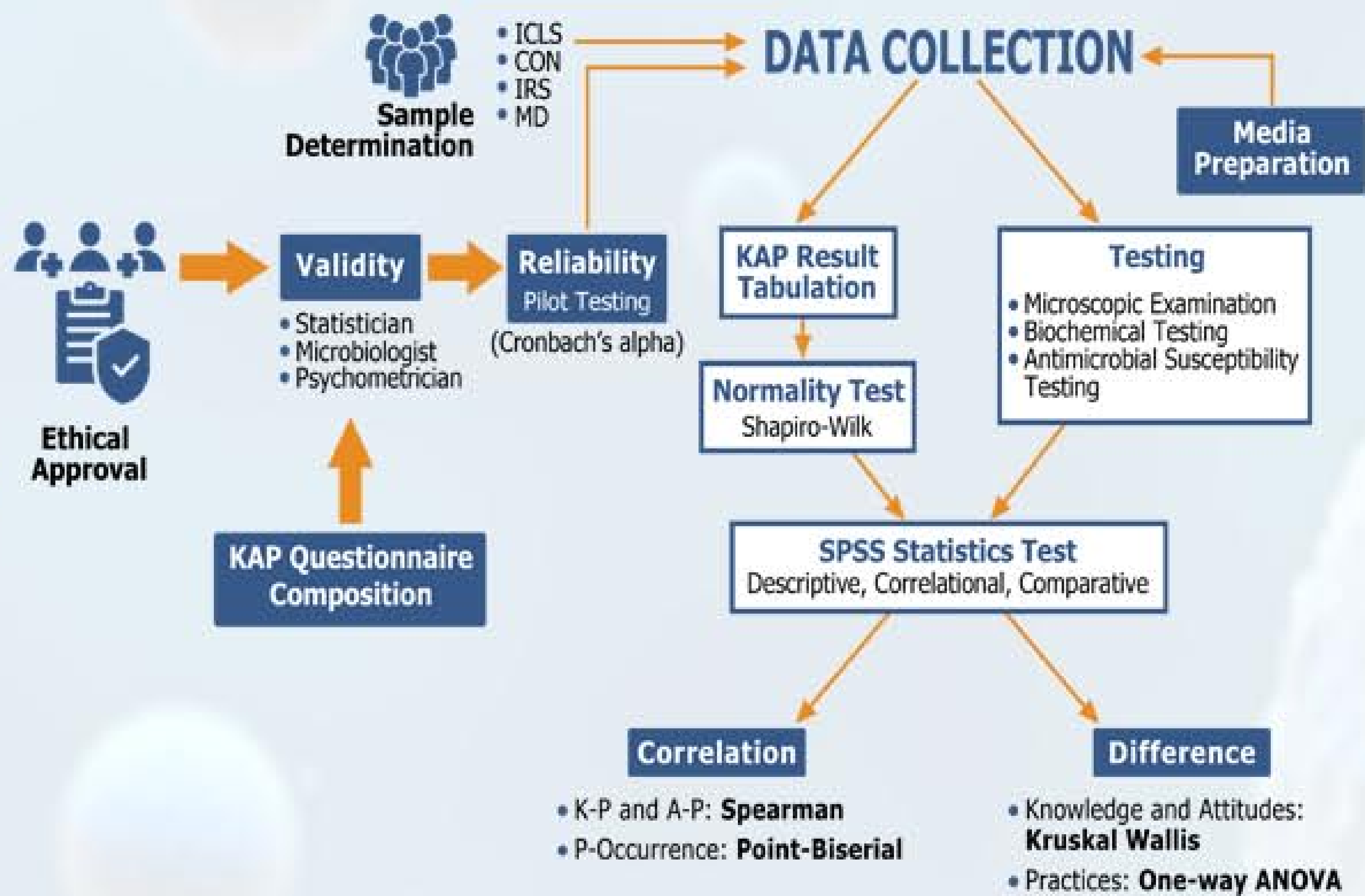
The study investigated the contamination of mobile phones by Methicillin-Resistant *Staphylococcus aureus* (MRSA) among 124 healthcare interns from Silliman University's health-related colleges using a descriptive correlational-comparative design. Mobile phones were swabbed without prior notice, and interns answered a Knowledge, Attitudes, and Practices (KAP) questionnaire. Findings revealed that 16.9% of phones were MRSA-positive, with Physical Therapy interns having the highest contamination rate (46.7%). While Medicine interns scored highest in knowledge, Nursing in attitude, and Medical Technology in practice, infection control practices did not significantly influence the presence of MRSA on phones. Statistical analysis showed no significant differences in knowledge across courses ($p = .184$), but there were notable differences in attitude ($p = .46$) and practice ($p = .32$). Despite high KAP scores, the continued presence of MRSA suggests that current hygiene measures may be insufficient, highlighting the need for more robust institutional infection control protocols.

Keywords: MRSA, Mobile Phones, Occurrence, Interns, Dumaguete City

INTRODUCTION

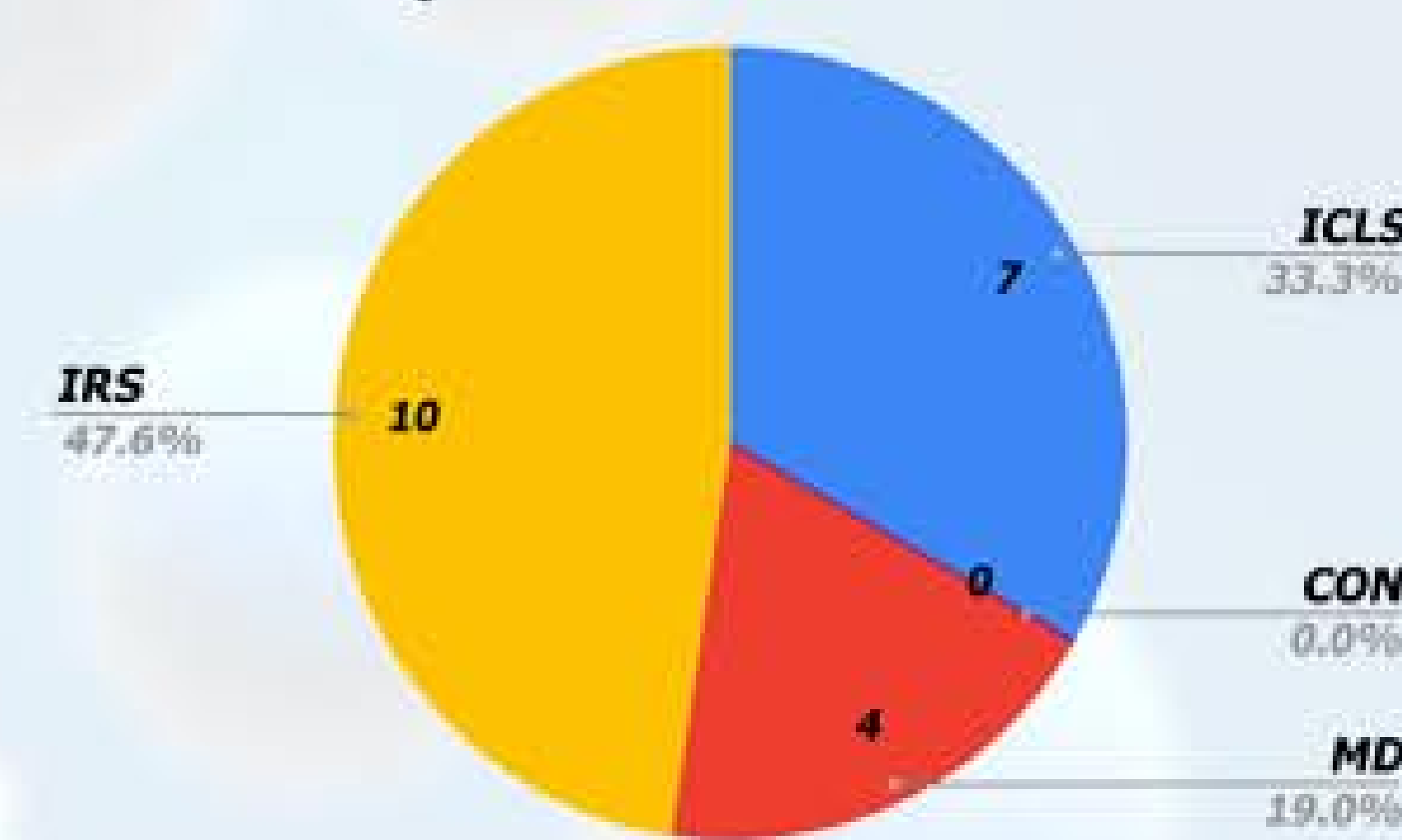
The development of antibiotics was expected to eliminate bacterial infection challenges, including those caused by *Staphylococcus aureus*, a common gram-positive bacterium on human skin (Muteeb et al., 2023). Initially treatable with penicillin, *S. aureus* became more difficult to manage after the emergence of Methicillin-resistant *Staphylococcus aureus* (MRSA) in 1961, which is resistant to beta-lactam antibiotics. MRSA is mainly transmitted in healthcare settings, with environmental surfaces identified as key reservoirs, though links to clinical cases remain unclear. With mobile phones widely used in clinical settings, they may serve as fomites for MRSA transmission, especially among less experienced healthcare interns (Albastaki et al., 2022). This study addressed research gaps by examining MRSA contamination on interns' mobile phones at Silliman University, evaluating their knowledge, attitudes, and practices (KAP), and analyzing how these factors relate to infection control.

METHOD



INTERPRETATION OF RESULTS

Distribution of MRSA Occurrence by Healthcare Course



MRSA Occurrence by Healthcare Course

MRSA was detected on 16.9% of interns' mobile phones, indicating that roughly one in six devices were contaminated. This confirms the persistent risk of MRSA exposure and colonization in clinical environments Modica et al., 2020; Chaoui et al., 2019; Giri et al., 2022).

Respondents' Level of Knowledge, Attitude, and Practices on MRSA Risks and Control Measures

Aspect	Response Level	Frequency (f)	Percentage (%)	Interpretation
Knowledge	2.0	1	.8	Low
	4.0-6.0	3	2.4	Average
	7.0-10.0	120	96.8	High
Attitude	3.0-4.0	124	100	Good
Practices	2.0-2.9	45	36.3	Moderate
	3.0-4.0	79	63.7	Good

- The findings suggest that strong MRSA-related knowledge and attitudes among interns may reflect effective education at Silliman University (Roy et al., 2020; Kugbeadzor et al., 2025).
- The presence of moderate practice scores reveals a knowledge-practice gap, highlighting the need for more hands-on training (Gassas, 2021; Vicerra, 2021).

Ranking of Mean Knowledge, Attitude, and Practices Scores by Healthcare Course

Course	Knowledge		Attitude		Practices	
	Mean Score	Rank	Mean Score	Rank	Mean Score	Rank
ICLS	9.60	2nd	3.85	3rd	3.27	1st
MD	9.61	1st	3.88	2nd	3.00	3rd
IRS	8.83	4th	3.78	4th	2.92	4th
CON	9.22	3rd	3.91	1st	3.15	2nd

- ICLS:** High KAP scores but 33.3% MRSA rate suggests possible lapses in device hygiene (Ali et al., 2023).
- IRS:** Highest MRSA rate (47.6%) with lowest KAP scores highlights need for targeted infection control training (Elkhawaga et al., 2024).
- MD:** Strong knowledge but moderate practices show a need to reinforce application during clinical duties.
- CON:** Zero MRSA cases; strong KAP and strict protocol enforcement likely contributed (Mitchell et al., 2014).

Comparison of Knowledge, Attitude, and Practices Scores Across Healthcare Courses

- Similar Knowledge across healthcare courses ($p > 0.05$) is likely due to standardized curricula or training.
- Attitudes and practices vary by course ($p < 0.05$), influenced by curriculum focus and clinical exposure differences.

Variables Compared	p-value
Knowledge Difference Between Healthcare Courses	.184
Attitude Difference Between Healthcare Courses	.046
Practices Difference Between Healthcare Courses	.032

Note: The difference in the means is significant when $p \leq 0.05$

- Standardized, practical infection control training is needed to ensure consistent practices across all healthcare disciplines.

- High MRSA knowledge across all programs; Medicine ranked highest.
- Nursing showed the best attitude, ICLS had best practices.
- 1 in 6 phones were MRSA-positive; IRS had the most cases.
- Infection control practices didn't prevent phone contamination.
- No major knowledge gap, but attitudes and practices varied by program.
- Even with good knowledge and practices, everyday items like phones remain a serious vector for infection.

CONCLUSION

RECOMMENDATION

- ✓ Compare MRSA contamination and KAP scores across academic programs.
- ✓ Investigate causes of low knowledge, attitudes, and practices.
- ✓ Review and improve infection control education across curricula.
- ✓ Study other high-touch items (e.g., stethoscopes, lanyards, pens, bags).
- ✓ Analyze contamination by clinical setting, shift, and environmental conditions.
- ✓ Use direct observation to reduce self-reporting bias.
- ✓ Apply molecular methods (e.g., PCR) for accurate MRSA detection.
- ✓ Recommend stricter hygiene and device disinfection protocols for interns.
- ✓ Strengthen biosafety and reduce infection risks during clinical training.



Correlation Matrix of Knowledge, Attitudes, Practices, and MRSA Occurrence Among Healthcare Interns

Variables Correlated	p-value	Correlation Coefficient	Interpretation
Knowledge vs. Practices	.039	.185	Weak positive correlation
Attitude vs. Practices	.376	.080	Weak positive correlation
Practices vs. MRSA Occurrence	.203	-.115	Weak negative linear correlation

Note: Correlation is significant at the 0.05 level (2-tailed).

Knowledge and practice scores were positively correlated, showing that more knowledge relates to better preventive practices. However, interns' attitudes did not significantly impact practices. Practices also showed no link to MRSA presence on mobile phones, suggesting reported practices may not reflect actual contamination.

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