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Investigating knowledge regarding antibiotics and antimicrobial resistance among pharmacy students in Sri Lankan universities

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Abstract

Background: Antimicrobial resistance (AMR) is a major challenge for global health care. Pharmacists play a key role in the health care setting to help support the quality use of medicines. The education, training, and experiences of pharmacy students have the potential to impact on patterns of antibiotic use in community and hospital settings. The aim of this study was to investigate antibiotic use, knowledge of antibiotics and AMR among undergraduate pharmacy students at Sri Lankan universities and to compare this between junior and senior pharmacy student groups.

Methods: A cross sectional study was conducted at the six universities in Sri Lanka that offer pharmacy undergraduate programmes. All pharmacy students in each university were invited to participate in this study using a self administered questionnaire with ethics approval. The study instrument comprised five major sections: demographic information, self reported antibiotic use, knowledge of antibiotic uses in human health, knowledge of AMR and antibiotic use in agriculture. Descriptive data analyses were conducted and Chi-squared analysis was used to explore associations between different variables and level of pharmacy education.

Results: Four hundred sixty-six pharmacy students completed the questionnaire. A majority of participants (76%) reported antibiotic use in the past year. More than half (57%) of the junior pharmacy students incorrectly indicated that antibiotic use is appropriate for the management of cold and flu conditions. Senior pharmacy students (n = 206) reported significantly better antibiotic knowledge than junior students (n = 260), p < 0.05. Overall pharmacy students showed good understanding of AMR and their knowledge level increased as the year of pharmacy study increased.

Conclusions: This study found that pharmacy students commonly report using antibiotics. Junior students report some misconceptions about antimicrobials. A comparison between junior and senior pharmacy students suggests that pharmacy education is associated with improved understanding of appropriate antibiotic use and AMR among undergraduate pharmacy students in Sri Lanka.

Keywords

Author Keywords: Antibiotics; Antimicrobial resistance; Pharmacy education; Knowledge; Sri Lanka; South Asia; Developing countries

KeyWords Plus: DEVELOPING-COUNTRIES; MEDICATION KNOWLEDGE; COMMUNITY PHARMACIES; DRUG INFORMATION; SELF-MEDICATION; OUTPATIENT CARE; IRRATIONAL USE; ATTITUDES; IMPACT; INDIA

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Sakeena, Mohamed Hameem Fatima; Bennett, Alexandra Ann; Mohamed, Fahim; et al. [Investigating knowledge regarding antibiotics among pharmacy and allied health sciences students in a Sri Lankan university.](#) JOURNAL OF INFECTION IN DEVELOPING COUNTRIES (2018)

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- Knowledge and beliefs on antimicrobial resistance among physicians and nurses in hospitals in Amhara Region, Ethiopia** Times Cited: 25

By: Abera, Bayeh; Kibret, Mulugeta; Mulu, Wondemagegn
 BMC PHARMACOLOGY & TOXICOLOGY Volume: 15 Article Number: 26 Published: MAY 19 2014
- Sexually transmitted infections management by medicine sellers in Bangladesh: findings from a questionnaire survey and simulated client visits** Times Cited: 1

By: Alam, N.; Nahar, Q.; DasGupta, S.; et al.
 TROPICAL MEDICINE & INTERNATIONAL HEALTH Volume: 16 Special Issue: SI Supplement: 1 Pages: 63-64 Published: OCT 2011
- Self-medication among medical and pharmacy students in Bangladesh.** Times Cited: 13

By: Alam, Naznin; Saffoon, Nadia; Uddin, Riaz
 BMC research notes Volume: 8 Pages: 763 Published: 2015 Dec 09
- EXPERIMENTAL EVALUATION OF THE EFFECTS OF DRUG INFORMATION ON ANTIBIOTIC PRESCRIBING - A STUDY IN OUTPATIENT CARE IN AN AREA OF SRI-LANKA** Times Cited: 42

By: ANGUNAWELA, II; DIWAN, VK; TOMSON, G
 INTERNATIONAL JOURNAL OF EPIDEMIOLOGY Volume: 20 Issue: 2 Pages: 558-564 Published: JUN 1991
- Health promotion and education activities of community pharmacists in Kuwait** Times Cited: 21

By: Awad, Abdelmoneim; Abahussain, Eman
 PHARMACY WORLD & SCIENCE Volume: 32 Issue: 2 Pages: 146-153 Published: APR 2010
- Clinical pharmacy practice in developing countries: Focus on India and Pakistan** Times Cited: 13

By: Bhagavathula, Akshaya Srikanth; Sarkar, Barun Ranjan; Patel, Isha
 ARCHIVES OF PHARMACY PRACTICE Volume: 5 Issue: 2 Pages: 91-94 Published: APR-JUN 2014

7. **Antibiotic treatment of urinary tract infection by community pharmacists: a cross-sectional study** Times Cited: 11
By: Booth, Jill L.; Mullen, Alexander B.; Thomson, David A. M.; et al.
BRITISH JOURNAL OF GENERAL PRACTICE Volume: 63 Issue: 609 Pages: E244-E249 Published: APR 2013
8. **Irrational use of antibiotics among university students** Times Cited: 58
By: Buke, C; Hosgor-Limoncu, M; Ermertcan, S; et al.
JOURNAL OF INFECTION Volume: 51 Issue: 2 Pages: 135-139 Published: AUG 2005
9. **Sale of antibiotics without a prescription at community pharmacies in urban China: a multicentre cross-sectional survey** Times Cited: 15
By: Chang, Jie; Ye, Dan; Lv, Bing; et al.
JOURNAL OF ANTIMICROBIAL CHEMOTHERAPY Volume: 72 Issue: 4 Pages: 1235-1242 Published: APR 2017
10. **Clinical pharmacists: The major support to Indian healthcare system in near future** Times Cited: 6
By: Deshpande, Prasanna R.; Vantipalli, Raghuram; Lakshmi, C. H. Chaitanya; et al.
JOURNAL OF PHARMACY AND BIOALLIED SCIENCES Volume: 7 Issue: 3 Pages: 161-174 Article Number: PMID 26229349 Published: JUL-SEP 2015
11. **Effect of clinical pharmacist intervention on medication discrepancies following hospital discharge** Times Cited: 27
By: Farley, T. Michael; Shelsky, Constance; Powell, Shanique; et al.
INTERNATIONAL JOURNAL OF CLINICAL PHARMACY Volume: 36 Issue: 2 Pages: 430-437 Published: APR 2014
12. **Exploration of over the counter sales of antibiotics in community pharmacies of Addis Ababa, Ethiopia: pharmacy professionals' perspective** Times Cited: 14
By: Gebretekla, Gebremedhin Beedemariam; Serbessa, Mirgissa Kaba
ANTIMICROBIAL RESISTANCE AND INFECTION CONTROL Volume: 5 Article Number: 2 Published: JAN 29 2016
13. **Knowing when to stop antibiotic therapy** Times Cited: 10
By: Gilbert, Gwendolyn L.
MEDICAL JOURNAL OF AUSTRALIA Volume: 202 Issue: 3 Pages: 121-+ Published: FEB 16 2015
14. **Awareness of Rational Medication Use and Antibiotic Self-Medication Practices among Undergraduate Students in a University in Sri Lanka** Times Cited: 5
By: Gunawardhana, Chaminie B.; Sakeena, M. H. F.; Sivayoganthan, C.
TROPICAL JOURNAL OF PHARMACEUTICAL RESEARCH Volume: 14 Issue: 4 Pages: 723-729 Published: APR 2015
15. **Decision making about antibiotic use: examining the role of antibiotic resistance knowledge, concern, and previous inappropriate antibiotic use.** Times Cited: 1
By: Hill, E. M.
Journal of Communication in Healthcare Volume: 10 Issue: 3 Pages: 226-233 Published: 2017
16. **Knowledge, attitude and practice of antibiotics: a questionnaire study among 2500 Chinese students** Times Cited: 36
By: Huang, Ying; Gu, Jiarui; Zhang, Mingyu; et al.
BMC MEDICAL EDUCATION Volume: 13 Article Number: 163 Published: DEC 9 2013
17. **Influence of medical training on self-medication by students** Times Cited: 22
By: James, H.; Handu, S. S.; Al Khaja, K. A. J.; et al.
INTERNATIONAL JOURNAL OF CLINICAL PHARMACOLOGY AND THERAPEUTICS Volume: 46 Issue: 1 Pages: 23-29 Published: JAN 2008
18. **Factors Contributing to Medication Noncompliance of Newly Diagnosed Smear-Positive Pulmonary Tuberculosis Patients in the District of Colombo, Sri Lanka** Times Cited: 12
By: Janakan, Navaratnasingam; Seneviratne, RdeA
ASIA-PACIFIC JOURNAL OF PUBLIC HEALTH Volume: 20 Issue: 3 Pages: 214-223 Published: JUL 2008
19. **Knowledge and Attitudes of Doctor of Pharmacy Students Regarding the Appropriate Use of Antimicrobials** Times Cited: 24
By: Justo, Julie Ann; Gauthier, Timothy P.; Scheetz, Marc H.; et al.
CLINICAL INFECTIOUS DISEASES Volume: 59 Supplement: 3 Pages: S162-S169 Published: OCT 15 2014
20. **Irrational use of antibiotics and role of the pharmacist: an insight from a qualitative study in New Delhi, India** Times Cited: 39
By: Kotwani, A.; Wattal, C.; Joshi, P. C.; et al.
JOURNAL OF CLINICAL PHARMACY AND THERAPEUTICS Volume: 37 Issue: 3 Pages: 308-312 Published: JUN 2012

21. [Why do general practitioners prescribe antibiotics for sore throat? Grounded theory interview study](#) Times Cited: **140**
By: Kumar, S; Little, P; Britten, N
BRITISH MEDICAL JOURNAL Volume: 326 Issue: 7381 Pages: 138-141 Published: JAN 18 2003
22. [Antimicrobial resistance: risk associated with antibiotic overuse and initiatives to reduce the problem](#) Times Cited: **142**
By: Llor, Carl; Bjerrum, Lars
THERAPEUTIC ADVANCES IN DRUG SAFETY Volume: 5 Issue: 6 Pages: 229-241 Published: DEC 2014
23. [Impact of the pharmacist on a multidisciplinary team in an antimicrobial stewardship program: a quasi-experimental study](#) Times Cited: **25**
By: Magedanz, Lucas; Silliprandi, Erci Maria; dos Santos, Rodrigo Pires
INTERNATIONAL JOURNAL OF CLINICAL PHARMACY Volume: 34 Issue: 2 Pages: 290-294 Published: APR 2012
24. [Doctors, drug companies and medical ethics: a Sri Lankan perspective.](#) Times Cited: **2**
By: Malavige, G N
Indian journal of medical ethics Volume: 1 Issue: 1 Pages: 26 Published: 2004 Jan-Mar
25. [Antimicrobial Resistance](#) Times Cited: **86**
By: Marston, Hilary D.; Dixon, Dennis M.; Knisely, Jane M.; et al.
JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION Volume: 316 Issue: 11 Pages: 1193-1204 Published: SEP 20 2016
26. [A Survey of Knowledge, Attitudes, and Beliefs of Medical Students Concerning Antimicrobial Use and Resistance](#) Times Cited: **34**
By: Minen, Mia T.; Duquaine, Damon; Marx, Melissa A.; et al.
MICROBIAL DRUG RESISTANCE Volume: 16 Issue: 4 Pages: 285-289 Published: DEC 2010
27. [Antibiotic Resistance - Problems, Progress, and Prospects](#) Times Cited: **139**
By: Nathan, Carl; Cars, Otto
NEW ENGLAND JOURNAL OF MEDICINE Volume: 371 Issue: 19 Pages: 1761-1763 Published: NOV 6 2014
28. [Low sale of antibiotics without prescription: a cross-sectional study in Zimbabwean private pharmacies](#) Times Cited: **29**
By: Nyazema, N.; Viberg, N.; Khoza, S.; et al.
JOURNAL OF ANTIMICROBIAL CHEMOTHERAPY Volume: 59 Issue: 4 Pages: 718-726 Published: APR 2007
29. [Socioeconomic and behavioral factors leading to acquired bacterial resistance to antibiotics in developing countries](#) Times Cited: **243**
By: Okeke, IN; Lamikanra, A; Edelman, R
EMERGING INFECTIOUS DISEASES Volume: 5 Issue: 1 Pages: 18-27 Published: JAN-FEB 1999
30. [Quality of Online Pharmacies and Websites Selling Prescription Drugs: A Systematic Review](#) Times Cited: **53**
By: Orizio, Grazia; Merla, Anna; Schulz, Peter J.; et al.
JOURNAL OF MEDICAL INTERNET RESEARCH Volume: 13 Issue: 3 Article Number: e74 Published: JUL-SEP 2011

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