The evolving role of the Indian pharmacist as a public health practitioner

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Biosketch

Dr. Balkrishnan (BPharm, Bombay College of Pharmacy, 1995; PhD (Public Health), University of North Carolina at Chapel Hill, 1999) is an internationally recognized public health scientist who combines his expertise in health informatics, pharmacy, health services research and biostatistics to create and analyze large data repositories which enable "real world" evaluations of the effectiveness of medical care. Dr. Balkrishnan's research and teaching program focuses on health services research and epidemiology related to global medical care access. Dr. Balkrishnan is involved in the development of several registries for non-communicable chronic diseases globally. He has performed several comparative effectiveness evaluations of technologies and treatments. Dr. Balkrishnan has published over 300 papers, books and book chapters and has been recognized nationally and internationally for his expertise in effectiveness research and evaluation as well as development of disease registries. Nearly two dozen students have received their PhD degrees under his guidance. Dr. Balkrishnan has also served as a consultant for numerous national and international agencies including the World Health Organization and the ministries of health for several countries in Asia.

The evolving role of the Indian pharmacist as a public health practitioner

The growth in pharmacy practice in India propelled by offering of clinical educational programs such as the Doctorate in Pharmacy (PharmD) has opened up tremendous opportunities for pharmacy graduates to become public health professionals, investigating major issues related to medication use, behaviors and problems that affect lives of the Indian population. Assessing the impact of medicines in large groups of individuals highlights the need to improve pharmaceutical health care access and quality, as well as fosters the development of pharmaceutical care, a new professional role, where the pharmacist can improve health care of all Indian citizens. Over the past few years I have had the opportunity to participate in a variety of projects related to pharmacy public health in India and I will highlight this new concept using three examples of specific research we have conducted and implications they have for enhancing the role of pharmacists.

One of the big challenges for the Indian health care system remains the irrational use of medicines and self-medication practices. We conducted a cross-sectional survey of these practices in the rural town of Sahaswan, Uttar Pradesh from 2010-2012 (1). Almost half of the 600 subjects surveyed reported self - medicating themselves. Self-medication was most common for headache and other pain, fever, urinary tract infections and respiratory tract infections. The drugs most commonly purchased for practicing self-medication were non-steroidal anti-inflammatory drugs, medications used for gastro intestinal problems and antibiotics. Prevalence of self-medication was high primarily among illiterate males aged above 15 years with a low income. Patient health awareness programs and counseling/assistance by community pharmacists and pharmacist continuing education are necessary for controlling self-medication. There is a need for planning interventions to promote rational self-medication through mass media and other avenues.

Another issue that remains a big issue is access and appropriate adherence to essential medications. To examine this issue, we explored the outcomes associated with pharmacological management of breast cancer in a tertiary care hospital in Udupi district of South Karnataka (2). An interview cum survey approach was used to collect the data. Patient age varied from 25-73 years, (mean age 47.23, SD=9.7).Out of 303 women, 53% were premenopausal and the rest of them were post-menopausal. Hormone responsiveness of tumors was found to be 57% as ER +ve. Among the subjects, 81.5% were treated with chemotherapy by different drug regimens, and adherence rates to medication regimens was less than 70%. All the ER/PR+ve cases were prescribed with tamoxifen /aromatase inhibitors for 5 years after the preliminary treatments, according to the menopausal status. The symptom free survival was estimated for each regimen by Kaplan Meir Survival analysis. The survival curve for regimen I (Adriamycin and cyclophosphamide) was 11.01yrs, for regimen II (5 Fluorouracil, adriamycin and cyclophosphamide) was 2.52 years and for regimen III (Adriamycin, cyclophosphamide and taxol) was 1.10 years. Cox proportional hazards model regression results confirmed statistically significant correlations between survival and adherence to treatment and stage of cancer at the time of diagnosis as survival predictors (Hazards Ratio=6.77, 95% CI=3.15-14.55, p=<0.001, and Hazards Ratio=0.10, 95% CI=0.05-0.22, P<0.001 respectively for adherence and stage. The primary findings of this study confirmed statistically significant correlations between survival and adherence to treatment and stage of

cancer at the time of diagnosis as survival predictors. However, adherence and access to these medications remains an issue of concern.

One other issue is that of educating patients about appropriate treatment options available to them. This may be a challenge in especially rural populations with low literacy levels. Patient information leaflets are universally-accepted resources to educate the patients/users about their medications, disease and lifestyle modification. We conducted a study in Karnataka state to prepare, validate and perform user-testing of pictogram-based patient information leaflets (P-PILs) among hemodialysis (HD) patients (3). The P-PILs are prepared by referring to the primary, secondary and tertiary resources. The content and pictograms of the leaflet was validated by an expert committee consisting of three nephrologists and two academic pharmacists. Quasi-experimental pre- and post-test design without control group was conducted on 81 HD patients for user-testing of P-PILs. The overall user-testing knowledge assessment mean scores were observed to have significantly improved from 44.25 to 69.62 with p value <0.001. The overall user opinion of content and legibility of the leaflets was good. Pictogram-based patient information leaflets could be a cost-effective tool to address this issue and pharmacists can play an important role in their development and dissemination.

At a system level, one of the pressing concerns in India is the development of a good pharmacovigilance system. Pharmacovigilance is a useful tool to assure the safety of medicines and protect consumers from their harmful effects. The most common categories of drugs withdrawn in the last decade were nonsteroidal antiinflammatory drugs (28%), antidiabetics (14.28%), antiobesity (14.28%), antihistamines (14.28%), gastroprokinetic drugs (7.14%), breast cancer and infertility drugs (7.14%), irritable bowel syndrome and constipation drugs (7.14%) and antibiotics (7.14%). Drug withdrawals from market were made mainly due to safety issues involving cardiovascular events (57.14%) and liver damage (14.28%). Majority of drugs have been banned since 3-5 years in other countries but are still available for sale in India. Healthcare professionals should consider Adverse Drug Reaction (ADR) reporting as part of their professional obligation and participate in the existent pharmacovigilance programs in their countries. In India, the National PV Program was re-launched in July 2010. Absence of a gold standard for a drug safety surveillance system, variations in culture and clinical practice across countries makes it difficult for India to completely adopt another country's practices (4).

We conducted a cross-sectional survey among 600 pharmacists in India using a pretested questionnaire with 33 questions (10 questions on knowledge, 6 on attitude, 7 on practice, 7 on future of ADR reporting in India and 3 on benefits of reporting ADRs) (5). The response rate of the survey was 67%. 95% responders were knowledgeable about ADRs. 90% participants had a positive attitude towards making ADRs reporting mandatory for practicing pharmacists. 87.5% participants were interested in participating in the National Pharmacovigilance program, in India. 47.5% respondents had observed ADRs in their practice, and 37% had reported it to the national pharmacovigilance center. 92% pharmacists believed reporting ADRs immensely helped in providing quality care to patients. Our survey found that there was scope for improving knowledge of pharmacovigilance among pharmacists. With additional training related to pharmacovigilance, Indian Pharmacists working in different sector can develop a successful ADR reporting system.

Our preliminary studies find that although pharmacovigilance and pharmacy practice are in very early stages in India, there seems to be a tremendous need for the population to be made more aware of appropriate ways to use medications rationally and effectively. This is a role for young pharmacy graduates to embrace and help alleviate significant drug-related problems in India ranging from poor adherence to treatment regimens all the way to potentially inappropriate and dangerous self-medication practices. At a system level, there needs to be more investments made into developing pharmacovigilance systems and better reporting of medication-related problems and side effects. There should be a multidisciplinary approach towards drug safety that should be implemented throughout the entire duration spanning from drug discovery to usage by consumers.

The huge divides that exist in patient education and income levels can be alleviated by design and use of cost-effective educational materials and the visual media. The development and empowerment of the pharmacist can occur only if appropriate steps are taken to ensure that pharmacy licenses are awarded only to qualified pharmacy graduates and adequate educational training is imparted so that pharmacists remain and are rewarded for being the best sources of information related to medication use. Successful policies in this regard and implementation of appropriate regulation will ensure the development of a safer and more effective pharmaceutical public health system, which can in turn, directly translate to improved health of all Indian citizens.

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