Sir,

Quality health research and publication is the need of the hour to generate evidence-based medical practice for effective patient care, medical education, and health expenditure. Ray et al. have reported that over a period of 10 years from 2005 to 2014, the research output from India averaged to only 14.5 publications per institution per year. Meanwhile, in the United States, the total number of publications itself is 3.3 times that of India. With over 579 medical institutions/hospitals and over 22,000 postgraduate medical thesis, India should be leading the world in medical research.[1]

According to the Global Burden of Disease (GBD) Categories by the World Health Organization (WHO) and the Institute of Health Metrics, the 2016 proportional mortality for India in category 1: communicable, maternal, perinatal, and nutritional conditions was 27.4%, category 2: noncommunicable diseases (NCDs) was 62.7%, and category 3: injuries was 9.9%.[2] This calls for a paradigm shift in focus from communicable to NCDs, which requires more research and development on NCD problem burden, prevention, and control strategies. We undertook this study to explore if the researches done over the last 5 years were in tally with the burden of diseases as classified by the WHO GBD categories.

A record-based descriptive study was planned and conducted over a period of 2 months, including all original research articles, irrespective of the study setting within India and abroad, published during the 5-year period from 2012 to 2017 in three public health journals published from India – National Medical Journal of India, Indian Journal of Public Health, and Indian Journal of Community Medicine, with an average impact factor of 1.00, 0.42, and 0.91, respectively, which were selected by experts in the field. All the original research papers from the selected journals were listed chronologically and were segregated into the three GBD groups. Articles were also subgrouped based on various epidemiological characteristics. The number of articles in each group was summarized as proportions, which were compared with the 2016 GBD group proportions. Data were entered using Epi Collect version 5, a mobile-based data collection application, and analyzed using STATA version 12.0 (StataCorp. 2011. Stata Statistical Software: Release 12. College Station, TX: StataCorp LP).

A total of 247 articles were selected into the study, and the epidemiological characteristics of the same are listed in Table 1. Over the 5-year period, there has been a definite increase in the number of original articles in these journals: 35 articles (2012) to 68 articles (2016). Upon classifying these articles based on GBD categories, we found that 96 articles (38.9%) were on topics related to communicable, maternal, and neonatal disease burden and 90 articles (36.4%) were on topics related to NCDs. Only 14 articles (5.7%) related to injuries and accidents were published. Forty-seven articles (19.0%) were related to various other health and health-related topics, which include health systems research (25 articles), food and medication related (6 articles), medical education (5 articles), geriatric care (3 articles), environmental health (3 articles), and others. These were not classified into the major three GBD categories.

The articles which came under the GBD category 2 – NCDs – were further classified, and it was found that 47 articles (52%) were studies on risk factors, while the rest 43 (48%) concentrated on disease per se. Among the articles on risk factors of NCD diseases, 17 (36.2%) were to find out the distribution and determinants of risk factors associated with NCD patients, while 14 (29.8%) concentrated on factors such as genetic constitution and obesity. Tobacco consumption (eight

| Table 1: Characteristics of the study articles included in the review |
|---------------------------------------------------------------|
| **Article characteristics**                                   | **Frequency, n (%)** |
| **Published journal (n=247)**                                 |                       |
| IJCM                                                          | 130 (52.6)             |
| IJPH                                                          | 62 (25.1)              |
| NMJI                                                          | 55 (22.3)              |
| **Year of publishing (n=247)**                                |                       |
| 2012                                                          | 35 (14.2)              |
| 2013                                                          | 42 (17.0)              |
| 2014                                                          | 48 (19.5)              |
| 2015                                                          | 54 (21.8)              |
| 2016                                                          | 68 (27.5)              |
| **Epidemiological parameter - study design**                  |                       |
| Observational (n=229)                                         |                       |
| Descriptive study                                             | 108 (47.2)             |
| Cross-sectional study                                         | 85 (37.1)              |
| Case–control study                                            | 24 (10.5)              |
| Cohort study                                                  | 12 (05.2)              |
| Interventional (n=18)                                         |                       |
| Quasi-experimental                                            | 6 (33)                 |
| Community trials                                              | 5 (28)                 |
| Clinical trials                                               | 4 (22)                 |
| RCT                                                           | 3 (17)                 |
| **Epidemiological parameter - study setting (n=247)**          |                       |
| Community based                                               | 144 (58.3)             |
| Facility based                                                | 103 (41.7)             |

IJCM: Indian Journal of Community Medicine, IJPH: Indian Journal of Public Health, NMJI: National Medical Journal of India, RCT: Randomized controlled trial

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articles – 17%), diet (four studies – 8.5%), physical activity (two studies – 4.3%), and alcohol consumption (two studies – 4.3%) were studied. Among the studies on NCDs, fifty articles (55.6%) were analytical and eight articles (8.9%) were interventional in nature – majority being clinical trials (three studies – 37.5%), two each in quasi experimental and field trial (25% each) and one randomized controlled trial (RCT) (12.5%).

We removed the 47 miscellaneous articles, and 200 articles were divided into the three GBD categories. On comparing the 2016 GBD study data for India with the results from our study, we see a clear disparity between the disease burden of the country and the research published on the respective conditions. We see that 48% of the articles investigated on communicable, maternal, and neonatal diseases, which formed only 27.4% of the burden. NCDs contributed to 62.7% of the burden, but only 45% of the articles were looking into this.

Peykari N et al. in a similar study done in Palestine revealed that there is a mismatch between the burden of disease conditions and the number of published reports on these disease conditions. Does this mean the researches done today are not based on the actual problems faced by the community? From the research profile generated by our study, we can comment that the problems in the community are not effectively studied and shared with the scientific community. This lack of scientific evidence will hamper further research on the development of preventive strategies and management options, leading to a viscous cycle of, once a burden – always a burden.

Majority of the articles used a cross-sectional analytical study design, which fails to establish a temporal association between an exposure and an outcome. Whereas community-based RCTs are equipped to highlight effective management strategies and treatment plans for various disease conditions. Only 7% of the total studies were interventional studies, among which majority was quasi-experimental. This highlights the need for generating quality first-hand information on the effectiveness of new health system interventions compared to the standard practice (a suitable control arm). This will convey a better meaning to the health policymakers and to the political brains of the nation.

The next stage of NCD research should focus on the efforts that can overthrow the burden of these risk factors. Among the individual risk factors, tobacco consumption was very extensively studied. The world needs more focused research on the NCD best buys for fighting this upward burden. An equal importance needs to be given to allied sectors such as environment health, sanitation, and population demographics too, and only then can we build a healthy nation which can deliver universal health coverage in all its aspects.

This kind of focused research work needs adequate monitoring and funding by an apex research organization such as the Indian Council of Medical Research (ICMR). ICMR can help lead the young researchers in taking India into a prime position in health and disease control research. The ICMR attempts to prioritize its research activities using the funds available to match with the national health priorities.

This is the first time a study like this is attempted with using public health journals and analyzed using the principles of epidemiology. We have limited our self to only three journals from the public health domain of India, and there is a chance that we miss out studies which were published in specialized journals on cardiovascular diseases, environment health, and other medical specialties. Regular audits like this should be encouraged within the publication systems so that we will be able to pick up lacunas in research areas, which encourage young researches in the medical field to choose areas of research and proceed further.

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**Conflicts of interest**

There are no conflicts of interest.

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