Methodologies and Messages in Iranian Articles on Maternal Care, Diabetes Mellitus, and Tuberculosis, Published in 2001 – 2006

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ABSTRACT

Introduction: An article with a clear message can transfer research knowledge better. However, this is the case when the message suits the type of study methodology (research design) and its results. The objective of this study was to assess the presence of message articles and the type of study methodologies.

Methods: Articles published between 2001 and 2006, on maternal care, diabetes, and tuberculosis, which were based on studies performed on the Iranian population were investigated. A systematic search was performed in foreign databases 'Pubmed, Medline, and Embase', and national databases 'Iranmedex, SID (Scientific Information Database), and Iranpsych'. Seven hundred and ninety-five articles were examined for the type of study methodology and presence of an actionable message (one that specifies what and how an action should be carried out).

Results: Among the 795 articles accessed, cross-sectional studies were the most frequent (50.9%) and systematic reviews were the least frequent (0.4%). Cohort cases were observed in 6.9% of the cases. Actionable messages were observed in 22.1% of all the cases and 24.7% of the cross-sectional studies.

Conclusions: Cohort studies increased from 5% in 2001 to 6.9% in 2006, but the shortage of systematic reviews represented a major weakness in the country's knowledge production process. Studies with a higher level of evidence such as systematic reviews, and cohort and interventional studies should be among the priorities of knowledge production in the country.

Keywords: Evidence-based medicine, knowledge management, knowledge dissemination, knowledge translation, research design

INTRODUCTION

Like elsewhere, research and scientific publications have increased over the years in Iran,[1] but the real purpose of research is to produce science and create change that would improve the status quo. Research knowledge transfer is the requisite of any evidence-based change.[2] Iran is a developing country, and its average income is lower than in industrial nations. The share

of research is less than 1% of the Gross National Product (GNP),[3] therefore, knowledge transfer becomes even more important in the light of resource constraints.[4]

Knowledge transfer begins with the formation of a research question and ends with the practical application of research results,[5] and article writing is a passive, but the most common method of knowledge transfer.[6,7] One of the frameworks advised by the World Health Organization (WHO) and other organizations for knowledge transfer[8,9] is the framework that covers five main factors of the 'presence of a clear message, defining the target audience, message transfer, the method of transfer, and finally evaluating the effect of the message transfer'. If observed, the first two of these five factors in article writing can facilitate knowledge transfer. In another article written by the same research group 'How much importance do we give to target audiences in article writing?' — the factors influencing the message (irrespective of its type) and target audiences were studied.[10] No doubt presentation of raw data cannot be considered as the research message.[11] By a clear message we mean clearly stating the conclusion of research findings.[12,13] Research messages can be classified as follows:[14]

Type 1 message: Concise, clear, and tangible information, that is, prevalence and incidence. Type 2 message: Findings that cannot directly lead to decision making as a result of the study's limitations, but that can be presented as probable relationships and effects. Type 3 message: A message that can be presented as an 'actionable message' and can specify what and how something should be done.

Research studies are different regarding their level of evidence; every type of message cannot be extracted from every type of study. The level of evidence and type of study should be kept in mind before extracting the message.[15] Although not always, but often type 1 and 2 messages come from descriptive and observational studies. Type 3 messages are usually extracted from methods that result in knowledge synthesis, that is, systematic reviews and controlled clinical trials with adequate sample sizes.[16]

The objective of this study was to assess the presence of messages and their suitability with the type and level of study in published articles.

METHODS

Articles published between 2001 and 2006, the time that the study was performed, were systematically searched in foreign databases 'PubMed, Medline, and Embase', and national databases 'Iranmedex, SID (Scientific Information Database), and Iranpsych'.

The systematic search that was performed was based on studies on Iranian populations, on three topics — maternal care, diabetes mellitus, and tuberculosis. These topics were chosen because of their significance as national health programs; they covered various types of diseases, that is, non-communicable (diabetes mellitus), communicable (tuberculosis), and at-risk groups (pregnant women). Maternal care and TB programs have also worked on the millennium development goals. Case reports, short reports, basic science articles, and irrelevant articles were excluded after inspection of article titles and abstracts. Other articles that were included in the study, if accessible, were examined and their checklists completed. In addition to the authors' names, year and site of publication, the type of study (cross-sectional, case control, cohort, interventional, review, others), type of message, and field of study (clinical or Health System Research) were noted.[10] When the target audiences were researchers and there was no direct application of results (in healthcare services), the article was considered a basic science article. However, when the direct target audiences were healthcare service providers like physicians and nurses they were considered as clinical studies. Finally, Health System Research (HSR) studies were those studies where the direct target audiences were policy makers, managers, and experts. The validity of the checklist was approved with the help of a literature review and in-depth interviews held with experts. Twenty checklists were simultaneously completed by two individuals and a kappa of 0.81 showed good reliability in the inter-rater agreement. The final checklist was completed by them separately and in case of a disagreement a third person would comment. SPSS 11.5 was used to analyze the data.

RESULTS

Among the 795 articles accessed cross-sectional studies were the most frequent with 405 (50.9%)

cases, and systematic reviews were the least frequent, with three (0.4%) cases. There were 55 (6.9%) cohort cases that showed a gradual increase from 5% in 2001 to 10% in 2006 (*P*=0.005). Figure 1 shows the frequency of different types of studies in the 2001 – 2006 time period.

Most of the articles contained at least one type of message (98.5%), but the type 3 message was seen in only 22.1% of the cases. Table 1 shows the frequency of message type on the basis of various types of studies. There were significant differences in study types and existence of the type 1 message (*P*<0.001) and type 2 message (*P*<0.001). Type 3 messages have a higher percentage in cross-sectional studies as compared to other types of studies. On the other hand, systematic reviews have the lowest percentage of type 3 messages. However, there were no significant differences between study types and their type 3 messages (*P*=0.8).

Table 2 illustrates various types of messages on the basis of their field of study. Messages of types 1 and 3 were significantly higher in HSR studies than in clinical ones (*P*<0.001). Articles that lacked

messages were seen more frequently in clinical studies.

DISCUSSION

Cross-sectional studies were the most, and systematic reviews were the least frequent types of studies observed. The type 3 message was seen
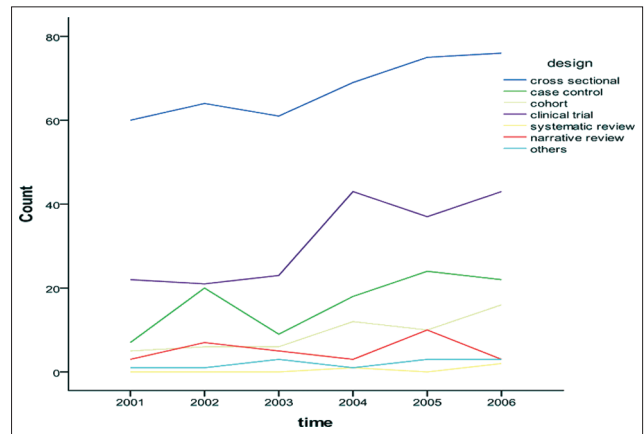

Figure 1: Changes in types of studies observed from 2001 – 2006

Table 1: Types of messages in various types of studies

Type of study	Type of message*				
	No message number (percentage)	Type 1 number (percentage)	Type 2 number (percentage)	Type 3 number (percentage)	Total number (percentage)
Cross-sectional	45 (11.1)	163 (40.2)	253 (62.5)	100 (24.7)	405 (50.9)
Case-control	8 (8.0)	13 (13)	81 (81.0)	17 (17.0)	100 (12.6)
Cohort	6 (10.9)	12 (21.8)	38 (69.1)	12 (21.8)	55 (6.9)
Clinical trial	26 (13.8)	10 (5.3)	131 (69.3)	39 (20.6)	189 (23.8)
Systematic review	0 (0.0)	0 (0.0)	3 (100.0)	0 (0.0)	3 (0.4)
Narrative review	10 (32.3)	0 (0.0)	16 (51.6)	5 (16.1)	31 (3.9)
Others**	5 (41.7)	0 (0.0)	5 (41.7)	3 (25.0)	12 (1.5)
χ^2 *P* value		*P*<0.001	*P*<0.001	*P*=0.8	
Total	100 (12.6)	198 (24.9)	527 (66.3)	176 (22.1)	795 (100)

*A single article can contain many types of messages. **Including: Studies conducted on drug or instrument manufacture, launching an executive/scientific system, evaluating tests, examining methods, qualitative studies and software design

Table 2: Distribution of frequency of fields of study containing a message and those without a message

Field of study	Type of message*				
	No message number (percentage)	Type 1 number (percentage)	Type 2 number (percentage)	Type 3 number (percentage)	Total number (percentage)
Clinical	78 (13.8)	107 (19.0)	390 (69.1)	107 (19.0)	564 (70.9)
HSR	23 (10.0)	91 (39.4)	137 (59.3)	69 (29.9)	231 (29.1)
Total	101	198	527	176	795 (100)

*A single article can contain many types of messages

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most frequently in cross-sectional and the least in systematic reviews.

Although we did not find a similar study in our literature review, our expectations were that type 3 messages could lead to proper interventions and eventually change, and would be found in systematic reviews, clinical trials, and cohort studies, respectively.[15-17] Cross-sectional studies can at times generate actionable messages, but it seems unlikely that 24.7% of them really do have such a capability. As we have not found a similar study, we cannot have an accurate judgment of our findings, and cannot compare them with other countries either.

Knowledge transfer consists of two main elements of 'knowledge' and 'transfer'. Producing knowledge through correct research pathways is mandatory for knowledge transfer.[16] However, as there are limited resources for research, we must keep in mind their quality and how their results are utilized.[4] Therefore, the importance of knowledge transfer aside, it is necessary to produce knowledge through appropriate research methods and attain the best possible evidence.[16]

The low number of systematic reviews represents a major weakness in the country's knowledge production. Yousefi-Nooraie *et al.* found that systematic reviews are low in developing countries because primary national studies are low in quality and researchers prefer to perform their systematic reviews in other countries. Hence, they have encouraged policy makers to invest more in systematic reviews and have advised improvements in their quality.[18]

In spite of all the aforementioned, scientific publications have shown quantitative and qualitative developments in Iran in recent years.[1] Our findings too show that cohort studies and clinical trials have increased throughout the years 2001 – 2006. Although inspiring, cohort studies are expected to improve after the development of the primary healthcare system in the country, in the past three decades.[19]

We examined all the articles that possessed our inclusion criteria. No doubt the inability to access all the articles is a limitation of this study. The other limitation of this study is that it is related to the years 2001 – 2006 and only three topics of maternal care, diabetes, and tuberculosis have been studied. Moreover, not evaluating the quality

of other studies is another. Hence, we recommend evaluating the quality of all research studies in addition to their types of study. Also, a comparison between international, regional, and national journals will also be beneficial. The results of such a study can help formulate the necessary interventions.

As previously mentioned, both researchers and decision makers believed the quality of research was an influential factor in the utilization of results.[20] In developing countries, the quality of research is often low; hence, decision makers cannot make use of research results. Therefore, one of the priorities of researchers and supporting organizations is to improve the quality of research and to invest more in studies with higher levels of evidence.[21]

Considering the importance of research quality, perhaps it may be better to utilize the knowledge available rather than to produce knowledge, when we are unsure of its quality.

CONCLUSIONS

The shortage of studies with high level of evidence (such as systematic reviews) can create problems in evidence-informed decision making. Hence, we recommend deputies of research to encourage researchers and also create the required context for the conduction of such studies.

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