

Translational Research and Complexity of Clinical Practice: Issues, Challenges, and Way Forward

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Healthcare delivery today stands at crossroads with an ever-increasing burden of diseases, coupled with scarcity of resources, to meet growing healthcare related needs.¹ This emerging situation demands innovative and careful use of limited resources to improve health of communities and populations across the countries and regions.

Application of the latest research into clinical practice is a mandatory requirement for improving healthcare delivery. Even though challenges are tremendous in its application, its incorporation into clinical practice is a necessity.

Translational Research is considered as a two-stage process. Stage one involves the transfer of new understanding of disease mechanisms, gained in the laboratory, into the development of new methods for diagnosis, therapy and prevention, and their first testing in humans. This is followed by stage two, in which translation of results takes place from clinical studies to everyday clinical practice and health decision-making.²

Application of latest knowledge through research is one of the most effective ways to favourably impact health, which broadly falls into the domain of translational research. It involves generation of new knowledge, followed by its incorporation into clinical practice.^{2,3} Translational research faces greater challenges today than ever before. In addition to the challenge of demonstrating favourable impact on health, application of new knowledge is becoming more demanding today due to the complexity of current clinical practice, and the availability of knowledge to the patient.

Evidence suggests that clinical practice has increased in its complexity and continues to do so at a rapid pace.⁴ Complexity in healthcare is related to factors associated with patients and their healthcare providers, workplace, and technological advances. Healthcare providers are finding it challenging to deal with the increasing pace of

development in their field, and are increasingly becoming dependent on other resources for effective delivery of healthcare to their patients.³ Today, patients are becoming more aware of healthcare-related issues because of easy access to information. This aspect places an additional pressure on a healthcare provider.⁵

Dealing with complexity in healthcare involves identifying sources for complexity, looking at ways others have found to deal with them, and to develop coping strategies.⁶

Barriers to translational research application in the face of complexity of clinical practice include a growing elderly population with multiple comorbidities, which is a patient-related factor; and necessitating a multi-disciplinary approach, which is a healthcare provider-related issue. Requirements of a person-centered model for clinical care, a holistic approach and context consideration in terms of society and culture, are impediments in applying the latest research to clinical practice as they may vary from one culture and society to the other. Cost of the advanced latest technology, treatment options, and products are other limitations.

If a recently developed oral hypoglycemic agent demonstrates effectiveness in clinical trials, it does not necessarily mean that it will work with same efficiency in all clinical situations. It may work differently in patients with multiple comorbidities, since its pharmacodynamics and pharmacokinetics may change. Moreover, it may not work if we do not consider the ability of a patient to procure it, tolerate its side effects, and adhere to its use. This example demonstrates the difficulties associated with application of available evidence into best clinical practice, followed by demonstration of a favourable impact on the variables of interest. An example of translational research is the finding that providing minimum education to private drug sellers in remote areas, where limited healthcare facilities are available, can lead to patient safety. This strategy, based on proven evidence, is now being considered for use by policy-makers.⁷ Another example is the finding that barbers are re-using disposable syringes which is spreading Hepatitis C in the community. Preventive strategies, based on these findings, are a way forward in controlling spread of Hepatitis C.⁸

In addition to the application of pure clinical research into practice, evidence exists that collaboration networks, multidisciplinary team capacity, and community engage-

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ment are crucial for translating new discoveries into practice.⁹ Several strategies can be considered for improving application of research into clinical practice. It is imperative to develop and test models which can be applied in situations that require multi-disciplinary approach and address comorbidities. Research-based models, which encompass holistic and person-centered approach, should be developed and tested. It is very challenging to put latest evidence into clinical practice in isolation. Unless we use an approach wherein models of clinical practice are applied and tested in real life-like situation, truly meaningful application of latest available evidence into clinical practice will not materialise.

It is important that the impact and outcome assessment of applied research is evaluated on an ongoing basis. Unless we demonstrate that available evidence favourably impacts health-related outcome, its application and replication in clinical practice will not be meaningful.

Translational research and its application in the face of complexity of clinical practice will continue to pose a challenge to the healthcare providers. It is important to be aware of this challenge, and try to apply available evidence in the best interest of the patient, keeping in mind favourable impact on healthcare-related outcome. Further research is recommended with regard to this issue, to ensure that benefits of technological advances are passed on to the patients.



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