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Original Research Article

A STUDY ON SUFFICIENCY AND RELEVANCY OF KNOWLEDGE OF GENETICS: A GENERAL PRACTITIONERS PERSPECTIVE

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ABSTRACT

Background: Modern diagnostic policies recommend evaluation of genetic susceptibility of common diseases. With the advances in genetic research many genetic tests are available for prevention and early diagnosis of such diseases. General practitioners perform key role in primary screening and directing patients for diagnosis. Awareness amongst them about application of fundamental principles of hereditary and appropriate referral system can help society in decreasing burden of such diseases. But lack of this orientation in GPs as noted by many authors demands educational intervention at training level as well as for improving competency of practitioners.

Aim: To evaluate genetic knowledge of GPs on behaviour and attitude scale.

Methods: Prevalidated questionnaire was used to obtain perceptions of GPs for their knowledge, attitude and behaviour through true/false questions and Lickerts scale.

Results: GPs are deficient in evaluating risk factors and prompt referral for diagnostic techniques. They lack required knowledge for associating fundamental principles of genetic with clinical conditions. Their behaviour toward record keeping and sensitizing patients was inappropriate. Their attitude needs to be changed so that they can understand gravity of genetic disorder and use of advanced genetic techniques.

Conclusion: Educational interventions for case-based and competency based medical education modules at training level and continuous medical education programme on genetic issue are indicated for improving GPs knowledge ,behaviour and attitude regarding application of genetic principles in management of patients.

KEY WORDS: General Practitioners, Genetic, Knowledge, Educational Interventions.

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INTRODUCTION

Genetic knowledge and technology has often been presented in terms of “revolution” and “radical change” [1]. With the increasing incidence of diseases like breast and colon cancers ,evaluation of their genetic basis attracts attention while deciding treatment modality . Taking a family history, assessing risk of hereditary disorders, referring to genetic services, discussing the basic advantages and disadvantages of genetic tests, and obtaining additional resources are now considered as integral part of primary health care in community [2]. As genetic tests are marketed for common diseases, genetics will no longer be the sole domain of geneticists and genetic counsellors [3].

General practitioners (GPs) perform a role of

gate-keeper in delivering primary care and directing modalities of diagnosis. Their importance in interpreting family history; recognizing the variable clinical utility of genetic information, and acquiring cultural competency is a crucial factor for higher levels of health care [4]. Hence integrating primary care, medical education and genetics expertise for dealing the key issues in genetic education for primary care as (1) considering inherited disease in the differential diagnosis of common disorders; (2) using appropriate counselling strategies for genetic testing and diagnosis, and (3) understanding the implications of a genetic diagnosis for family members is utmost important [5,6].

Application of the principles of outcome-based education to the field of medical education research requires strong feedback system. Understanding changing nature of social needs; educational objectives of curriculum must be subjected to rigorous standards of reliability and validity, particularly in relation to assessment tools that are used to evaluate outcomes. To measure the genetic-related knowledge and practice of health professionals in primary care forms ground for curricular reformations as well as strengthening desired skills in practitioners [7,8]. This study attempts to evaluate present status of utility of fundamentals and advances of medical genetic in clinical practice incorporating scales that measure knowledge, behaviour and attitudes.

Aim and objectives: To evaluate clinical competency of GPs in delivering genetic information based on their knowledge, behaviour and attitude. To take perceptions of GPs on current curricular contents and teaching-learning modalities in genetic at graduation level.

MATERIALS AND METHODS

Responses on prevalidated questionnaire [4] were obtained from general practitioners (GPs) along with interviews of GPs. Questionnaire involved four sections. In section 1 information on individual GPs incorporation of genetic knowledge in history taking and record maintenance was considered. It also involved questions on how and when during their graduation studies they acquired knowledge of genetic. Section 2 was knowledge scale which contained ten questions to be answered in True/False format. Section 3 was behaviour scale where five different case scenarios were given. GPs were suppose to response for their way of handling the case, which is evaluated by awarding points from 1 to 3 for each response. Score 3 for each question is considered exellent, score 2 appropriate and score 1 inappropriate. Section 4 was attitude scale where 16 items were to be responded on Lickerts scale. Total score of attitude ranged from -32 to +32 [9,10].

Interviews were conducted for 56 GPs. They were asked about their practical problems in handling genetic issues, knowledge of advanced diagnostic techniques and their nearby availability. It also involved their mode of acquiring knowledge of genetic and sufficiency of that knowledge with current practice. Whatever they learned in graduate course was relevant and appropriate for that particular year of course or not. What teaching-learning methodology was used for genetic during the course and what they think would had been used was asked.[11] Genetic curricular details were discussed and their opinion on sufficiency and relevancy was asked for.

RESULTS

126 GPs out of 300 responded to questionnaire. Practitioners involved in the study see 396 patients (median value) with range from 265 to 437 per week. Family history is recorded as a handwritten text by 98 practitioners; nobody records it in pedigree chart format. Discussing genetics issues with patients was found comfortable by 109 practitioners.

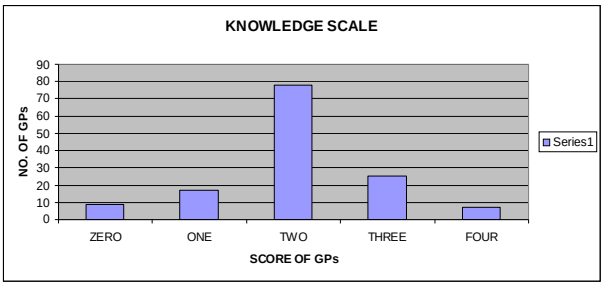
91 GPs learnt subject of genetics without formal teaching whereas only 12 responded that they learnt it in first MBBS Anatomy lectures and not later.

GPs are not clear about the curricular contents of genetics they had. They were unable to correlate fundamental principles of genetics with clinical practice.

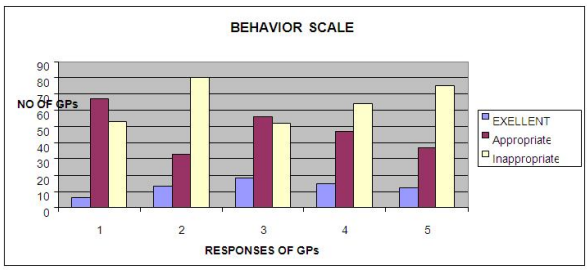
102 GPs have idea of diagnostic techniques in genetics and they are restricted unto ultrasonography. None of them have any knowledge of advanced techniques of investigation.

Only 12 GPs ever referred additional resources

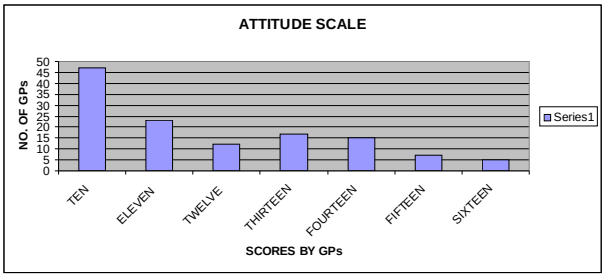
for evaluation of genetic issues. On knowledge scale 78 GPs could score 2 while on 7 could score 4 out of ten as majority were unsure about facts.



On behaviour scale very few GPs could give very appropriate response for all five questions. Maximum GPs chose inappropriate way of behaviour in three conditions.



Attitude scale involved total 16 items and score ranged from -32 to +32. Generalised attitude of GPs appeared poor as their score lied below 16.



In the above context where genetic advances were seen as having little relevance for practice, interview of majority of GPs showed their disinterest in understanding their role in treatment of genetically controlled disorders.

My strength lies in knowing ... in which direction to send the patients. I am not an expert in genetic counselling or calculating risks, which is beyond my practice.

Their reluctance is reflected as:

Genetic conditions are not my bread and butter; the new genetics has little impact on my day to day clinical work

Participants who were aware of the ongoing genetic research of common diseases (such as BRCA1 and BRCA2 conferring susceptibility to breast and ovarian cancer) were reluctant to alert patients to genetic risk in the absence of effective screening technologies and therapies to reduce risk or prevent disease.

They comment:

The problem with these diseases [breast and ovarian cancer] is what can you do about it if you've got the gene? Why to raise issue and make patients life miserable.

Preventive aspect of genetic counselling they denied by saying:

How do genes and lifestyle interact? Will adopting a healthy lifestyle change their genes, their genetic risk? These are the things I need to know.

They accepted that they were not trained in these regards, so they give less emphasis on risk factors and intimating patients. One of them was not clearly distinguish between familial and hereditary.

I would take 'familial' to mean conditions that crop up in the family in relatives who aren't related—for example, I see depression, alcoholism, and obesity affecting husbands and wives.

Many of them were never exposed to any genetic teaching module. As it was not considered vital part of curriculum, fundamental principles of genetics they could not absorb. Bedside clinics often ignored importance of family history. Indoor patient care overlooked on genetic basis of common diseases and certainly knowledge of genetics seldom required apart from rarely visiting patient of Down syndrome in paediatric OPD. Participant agreed that they were never taught to consider causative factors for spontaneous abortions and their effect on mothers' health.

Thus as per GPs opinion there is generalised apathy in training modules for sensitising future practitioners for genetic basis of common diseases has percolated in their practice. To modify scenario they suggested Continuous Medical Education (CME) on genetic topics for them may be helpful. But they more focussed on better clinically oriented modalities for teaching-learning genetic.

DISCUSSION

Carrol et al states that The Human Genome Project led to a rapid increase in the number of genetic diseases for which genetic testing is

available. Patients are likely to hear about genetic advances through the media and will turn to their primary care providers, but in developing world as well as some developed countries these primary care providers lack the knowledge and skills required to effectively deliver genetic services. Mere unawareness about the genetic tests is not the challenge, but attitude of family physicians and other professionals beneficience and non-maleficience of genetic testing determines its effectivity. Similarly how to deliver genetic education to them, how much and at what level with which teaching-learning modality in ways that respect the beliefs, expectations, and culture of primary care [3].

Many groups have developed guidelines for genetic education and defined core competencies in genetics for health care providers. With the availability of advanced diagnostic methods for inborn errors of metabolism , impact of pharmacogenetics in theraputics and research in cancer genetic demand improvement in referral decisions regarding patients with positive family history particularly in commonly encountered conditions like breast and ovarian cancer. Continuous medical education (CME) as an educational interventions, involving interactive sessions, may help in updating knowledge but nothing can replace role of teaching fundamental principles of genetic with bedside clinic during graduation studies [4,12].

The Genetics Education Project was created to help GPs in Ontario obtain the knowledge needed to help their patients make informed decisions regarding genetic services. Genetic educational materials for GPs were developed and evaluated, and a dissemination strategy was created. In accordance with research showing that "the use of local opinion leaders can successfully promote evidence-based practice" [3,4]. Burke et al found three areas of potential controversy: (1) the role of nondirective counselling versus shared decision-making in discussions of genetic testing; (2) the intrinsic value of genetic information when it does not influence health outcomes, and (3) indications for a genetics referral. The project provides an opportunity for ongoing discussion about these important issues. Various questions incorporated rated in the present study are intended to overcome this controversies [5].

In this context present study identifies the "therapeutic gap" as a reason for not raising the issue of genetic risk in the context of common diseases [5]. Policy makers had always overlooked the genetic basis of diseases and therefore its potential to cause harm were never considered . They are wrong to assume that traditional methods of education, training, and decision support systems will ensure that general practitioners are willing to implement the new genetics. Resistance to implementing new genetic knowledge is more than defensive fence building; it reflects a commitment to holism [13,14].

Educational interventions are meant for knowledge translation including exchange, synthesis and ethical application of knowledge [14]. As noted by many authors, at the base of knowledge translation is the predisposition to change which is conbined effect of cognitive, affective and psychomotor domain. Regardless of how genetics knowledge and clinical skills in primary practice are integrated and delivered, need to evaluate the effectiveness of such dissemination in order to demonstrate that changes in knowledge and clinical skills forms foundation of curricular reforms and application of newer teaching-learning modality [15]. This study attempts to evaluate a multifaceted and complex learning intervention in genetics, as part of a systematic effort to improve genetic education in primary care providers, and draws attention of policy makers towards modified strategies for behavioural change, as well as improvement in knowledge and attitudes in GPs. More detailed longitudinal findings on a larger population of GPs who received this intervention are reported from developed countries [16]. We sincerely accept that additional outcome measures are required to capture knowledge translation, and it can be debated to what extent data collection by questionnaire alone can evaluate this.

CONCLUSION

Genetic basis of common disorders would be the future trend in diagnosis and management of them. We observed in this study that GPs who are gatekeeper of primary heath care are lacking sufficient knowledge for delivering genetic

information. Inappropriate behaviour of GPs unto evaluating risk factors of genetic disorders is fetching them in ethical dilemma. Hence to develop holistic attitude amongst GPs along with continuous medical education; this study recommends relevant, case-based genetic teaching in an interactive, interdisciplinary learning environment where medical students can be fostered to be future GPs.

Constructive feedback is building block of competency based medical education. Therefore periodic questionnaire based studies like this may help in bridging therapeutic gap between medical educational policies and social, economical health of society.

Conflicts of Interests: None

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