Shahid Sadoughi University of Medical Sciences School of Public Health

Social Behavior Research & Health

Social Behavior Research & Health

Social Determinants of Health Research Center

EDITORIAL

Trends and Prospects in Public Health Education: A commentary

Manoj Sharma

School of Public Health, Jackson State University, Mississippi, United States of America.
(**E-mail:** manoj.sharma@jsums.edu, **Tel:** +601 979 8850)

Citation: Sharma M. Trends and Prospects in Public Health Education: A commentary. Social Behavior Research & Health (SBRH). 2017; 1(2): 67-72.

Science progresses over time. New approaches are built over old methods and that paves way for progress. In the field of public health education also there has been tremendous growth and development over the years. These changes have kept abreast with the progress in the field of medicine. In clinical medicine, the old school was based on asking patients about their symptoms and eliciting signs to make clinical diagnosis and recommend treatment. In this approach history taking of the patient was vital and a great emphasis was placed on clinical acumen.[1] This phase can be called as the first generation approach. Slowly this approach was replaced by developments in biochemistry, microbiology and pathology which led to laboratory investigations that could assist in diagnosis and guide treatment.[2] This was the era of investigational medicine and can be called as the second generation medicine. The third generation medicine was influenced by the conducting of Randomized Controlled Trials (RCTs).[3] All drug testing is based on RCTs and so are a variety of medical procedures that have to go through the rigors of RCTs which are considered as gold standards This phase has been called as the era of evidence-based medicine which is still going on.[4] However, recently with genetic mapping and the advent of genomics and associated fields like pharmacogenomics,[5] nutrigenetics, and nutrigenomics[6] a new trend is being developed in the form of precision medicine[7] which is the fourth generation approach in medicine. This approach is also making concerted use of technology. Former US President Barack Obama launched the National Institutes of Health (NIH) Precision Medicine Initiative (PMI) in January 2015.[8] Precision medicine uses the concepts of personalized medicine at a more precise level through advancements in science and technology including genetics and genomics sequencing (Figure 1).[9]

[DOR: 20.1001.1.27832104.2017.1.2.4.2]

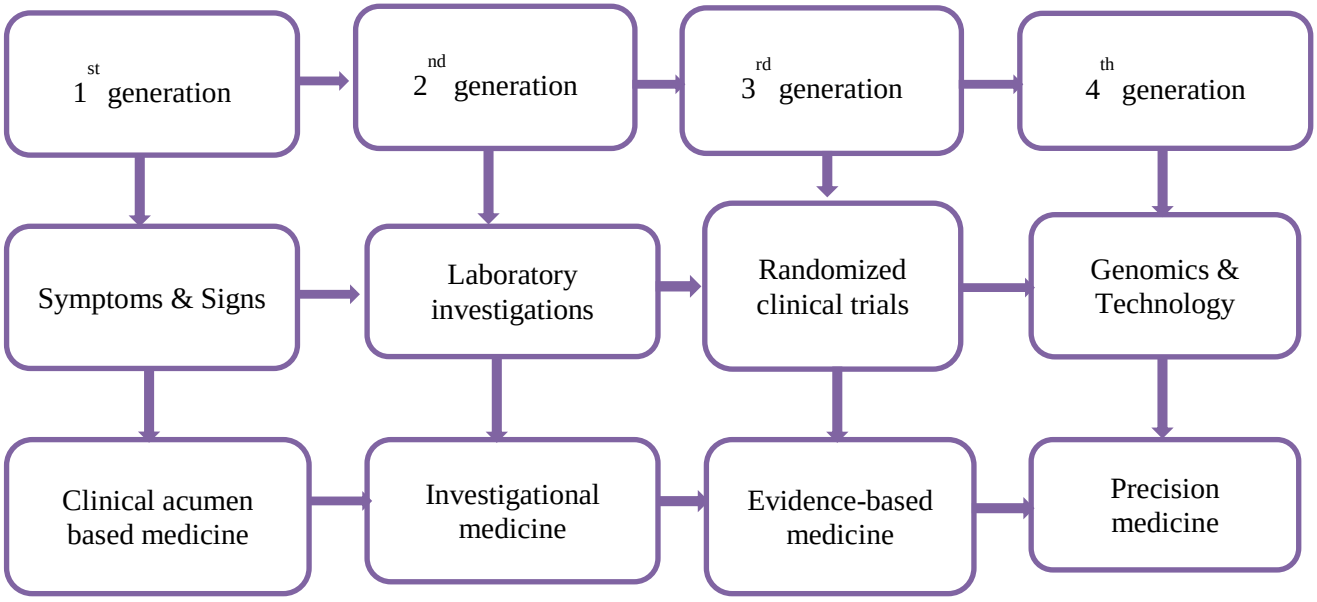

Figure 1. Trends in clinical medicine interventions

A parallel movement can be seen in the field of public health education which though may be not directly but certainly indirectly has been affected by trends in clinical medicine. In the 1970s and 80s, public health education primarily family planning research relied heavily on Knowledge, Attitudes, Practices (KAP) surveys[10, 11] and consequently designed knowledge-based interventions in 70s and 80s.[12,13] However, it was found that knowledge was necessary but was not sufficient for behavior change which is considered as the desired outcome of public health education efforts.[14] So this first generation effort was replaced by second generation approach of developing skill-based health education interventions in the 1990s. In this regard several approaches were developed and tested such as interventions to combat HIV/AIDS epidemic, [15, 16] refusal skills interventions in adolescents, [17-19] problem solving interventions, [20, 21] and others. The second generation approach was a good trend but behavior change remained elusive. So as a result the third generation interventions started appearing mainly in the 2000s that entailed use of behavioral theories more on lines with evidence-based medicine and they were part of evidence-based practice in public health. Some of the theories used were health belief model,[22] transtheoretical model,[23] theory of reasoned action,[24] theory of planned behavior,[25] theories of stress and coping,[26,27] social cognitive theory,[28] social marketing,[29] diffusion of innovations,[30] Freire's model of adult education,[31] emotional intelligence theory,[32] Information-Motivation-Behavioral skills (IMB) model,[33] self-determination theory,[34] PRECEDE-PROCEED model,[35] socio-ecological models,[36] and others. The theory-based trend is still continuing but is slowly getting replaced by a new trend of fourth generation interventions that entail use of multiple theories and relies on technology for behavior change. Some notable developments in this regard include integrative model of behavioral prediction, [37] theory of triadic influence, [38] Multi-Theory Model (MTM) of health behavior change[14, 39] and others. These interventions are also utilizing advancements in technology such as computers, tablets, smart phones, apps, etc. (Figure 2).[40-42]

[DOR: 20.1001.1.27832104.2017.1.2.4.2]

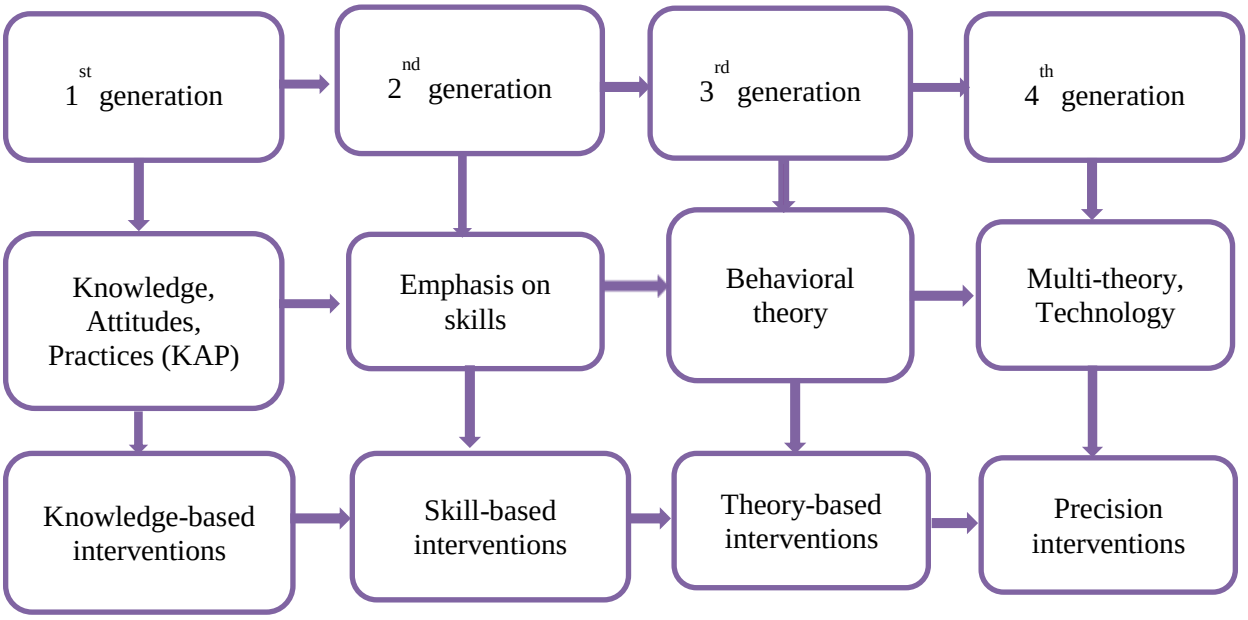

Figure 2. Trends in health education and health promotion interventions

The fourth generation interventions are currently being tested. One of the fourth generation theory, MTM of health behavior change[14, 39] is particularly promising because it is very practical, parsimonious and easily replicable. The theory divides the behavior change into (1) initiation or starting of the behavior change which is explained by three constructs namely participatory dialogue in which advantages of changing behavior outweigh the disadvantages, behavioral confidence and changes in physical environment, and (2) sustenance of the behavior which is explained by the constructs of emotional transformation, practice for change and changes in social environment.[14,39] Notwithstanding that this is a new theory MTM has already been utilized in number of studies. For example, its constructs have been used in promoting drinking water instead of sugar sweetened beverages and they accounted for about 62% of the variance in the initiation and approximately 58% of the variance in the sustenance.[43] The constructs have also been applied for predicting change in eating small portion sizes as opposed to eating large portion sizes and accounted for about 37% of the variance in the initiation and about 21% of the variance in sustenance.[44] The constructs have also been applied for predicting physical activity behavior change in college students and accounted for about 26% of the variance in initiation of physical activity behavior in sedentary students and approximately 30% of the variance in sustenance of physical activity behavior.[45] MTM has also been utilized to predict adequate sleep behavior where for initiation constructs accounted for about 24% of the variance while for sustenance constructs accounted for about 34% of the variance.[46] MTM based interventions have the potential for being brief, delivered both face-to-face and online, utilize technology and being very precise. More researchers should reify this theory.

In conclusion, it can be stated that the future of behavior change interventions in public health education lie in utilizing multiple theories and developing, implementing and evaluating robust programs. The trend in this direction has already started and will come to fruition in the coming decade where we can see multitude of such interventions with a myriad of behaviors and target populations.

References

1.Bârsu C. History of medicine between tradition

[DOR: 20.1001.1.27832104.2017.1.2.4.2]

and modernity. Clujul Medical. 2017;90(2):243-245. https://doi.org/10.15386/cjmed-794
2. Price CP, Barnes IC. Laboratory medicine in the United Kingdom: 1948-1998 and beyond. Clinica Chimica Acta. 1999;290(1):5-36.
3. Baldi I, Dal Lago E, De Bardi S, et al. Trends in RCT nursing research over 20 years: Mind the gap. British Journal of Nursing. 2014;23(16):895-899. https://doi.org/ 10.12968 /bjon.2014.23.16.895
4. Mellis C. Evidence-based medicine: What has happened in the past 50 years?. Journal of Paediatrics and Child Health. 2015;51(1):65-68. https://doi.org/10.1111/ jpc.12800
5. Mizzi C, Peters B, Mitropoulou C, et al. Personalized pharmacogenomics profiling using whole-genome sequencing. Pharmacogenomics. 2014;15(9):1223-1234. https://doi.org/ 10. 2217/ pgs.14. 102
6. Fenech M, El-Sohemy A, Cahill L, et al. Nutrigenetics and nutrigenomics: Viewpoints on the current status and applications in nutrition research and practice. Journal of Nutrigenetics and Nutrigenomics. 2011;4(2):69-89. https:// doi.org/10.1159/ 000327772
7. Collins FS, Varmus H. A new initiative on precision medicine. New England Journal of Medicine. 2015;372(9):793-795. https://doi.org/ 10. 1056/ NEJMp1500523
8. Porche DJ. Precision medicine initiative. American Journal of Men's Health. 2015;9(3):177. https://doi.org/10.1177/1557988315574512
9. Hammer MJ. Precision medicine and the changing landscape of research ethics. Oncology Nursing Forum. 2016;43(2):149-150. https:// doi.org/10.1188/16.ONF.149-150
10. Naylor EW. Genetic screening and genetic counseling: knowledge, attitudes, and practices in two groups of family planning professionals. Social Biology. 1975;22(4):304-314.
11. Taneja RN. Fertility, knowledge, attitude and practice (KAP) study in relation to family planning in a selected population of the Armed Forces. Armed Forces Medical Journal, India. 1972;28(1):102-107.
12. Maccoby N, Farquhar JW, Wood PD, Alexander J. Reducing the risk of cardiovascular disease: Effects of a community-based campaign on knowledge and behavior. Journal of Community Health. 1977;3(2):100-114.
13. Perry C, Killen J, Telch M, Slinkard LA, Danaher BG. Modifying smoking behavior of teenagers: A school-based intervention. American Journal of Public Health. 1980;70(7):722-755.
14. Sharma M. Theoretical foundations of health education and health promotion. 3rd ed. Sudbury: Jones & Bartlett Learning; 2017. P:231-270.
15. Kalichman S, Topping M, Smith S, Emshoff J, Morris F, Nurss J. A randomized trial of a brief HIV risk reduction counseling intervention for women. Journal of Consulting and Clinical Psychology. 1998;66(5):856-861.
16. Gillmore MR, Morrison DM, Richey CA, Balassone ML, Gutierrez L, Farris M. Effects of a skill-based intervention to encourage condom use among high risk heterosexually active adolescents. AIDS Education and Prevention. 1997;9(1):22-43.
17. Charlton A, Minagawa KE, While D. Saying "no" to cigarettes: A reappraisal of adolescent refusal skills. Journal of Adolescence. 1999;22(5):695-707.
18. Elder JP, Sallis JF, Woodruff SI, Wildey MB. Tobacco-refusal skills and tobacco use among high-risk adolescents. Journal of behavioral medicine. 1993;16(6):629-642.
19. Warzak WJ, Page TJ. Teaching refusal skills to sexually active adolescents. Journal of Behavior Therapy and Experimental Psychiatry. 1990;21(2):133-139.
20. Sharma M, Petosa R, Heaney CA. Evaluation of a brief intervention based on social cognitive theory to develop problem-solving skills among sixth-grade children. Health education & behavior. 1999;26(4):465-477.
21. Toseland RW, Blanchard CG, McCallion P. A problem solving intervention for caregivers of cancer patients. Social Science & Medicine.

[DOR: 20.1001.1.27832104.2017.1.2.4.2]

1995;40(4):517-528.
22. Rosenstock IM. Historical origins of the health belief model. In: Becker MH, editor. The health belief model and personal health behavior. Thorofare, NJ: Charles B. Slack; 1974. P:1-8.
23. Prochaska JO. Systems of psychotherapy: a transtheoretical analysis. England: Dorsey; 1979.
24. Fishbein M, Ajzen I. Belief, attitude, intention and behavior: An introduction to theory and research. USA: Addison-Wesley; 1975.
25. Ajzen I. The theory of planned behavior. Organizational Behavior and Human Decision Processes. 1991;50(2):179-211.
26. Lazarus RS. Psychological stress and the coping process. New York: McGraw-Hill; 1966.
27. Kobasa SC. Stressful life events, personality, and health: an inquiry into hardiness. Journal of personality and social psychology. 1979;37(1):1-11.
28. Bandura A. Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall; 1986.
29. Andreasen AR. Marketing social change: changing behavior to promote health, social development, and the environment. San Francisco: Jossey-Bass; 1995.
30. Rogers EM. Diffusion of innovations. 5th ed. New York: Free Press; 2003.
31. Freire P. Pedagogy of the oppressed. New York: Continuum; 1970.
32. Goleman D. Emotional intelligence. New York: Bantam; 1995.
33. Fisher JD, Fisher WA. Changing AIDS risk behavior. Psychological bulletin. 1992;111(3):455-474.
34. Ryan RM, Deci EL. Self-determination theory and the facilitation of intrinsic motivation, social development and well-being. American psychologist. 2000;55(1):68-78. https://doi.org/10.1037//0003-066X.55.1.68
35. Green LW, Kreuter MW. Health program planning: An educational and ecological approach. 4th ed. Boston: McGraw-Hill; 2005.
36. Bronfenbrenner E. Ecological models of human development. In: International Encyclopedia of Education. 2nd ed. Oxford: Elsevier; 1994.
37. Fishbein M. An integrative model for behavioral prediction and its application to health promotion. In: Diclemente RJ, Crosby RA, Kegler MC, editors. Emerging theories in health promotion practice and research. 2nd ed. San Francisco: Jossey-Bass; 2009. P:215-234.
38. Flay BR, Schure M. The theory of triadic influence. In: Wagenaar AC, Burris SC, editors. Public health law research: theory and methods. San Francisco: Jossey-Bass; 2012. P:169-192.
39. Sharma M. Multi-theory model (MTM) for health behavior change. Webmed Central Behavior. 2015;6(9):1-7.
40. Brayboy LM, Sepolen A, Mezoian T, et al. Girl talk: a smartphone application to teach sexual health education to adolescent girls. Journal of Pediatric and Adolescent Gynecology. 2017;30(1):23-28. https://doi.org/10.1016/j.jpag.2016.06.011
41. Roy MJ, Highland KB, Costanzo MA. GET Smart: Guided education and training via smart phones to promote resilience. Studies in health technology and informatics. 2015;219:123-128.
42. Rusatira JC, Tomaszewski B, Dusabejambo V, et al. Enabling access to medical and health education in Rwanda using mobile technology: Needs assessment for the development of mobile medical educator apps. JMIR Medical Education. 2016;2(1).
43. Sharma M, Catalano HP, Nahar VK, Lingam V, Johnson P, Ford MA. Applying Multi-Theory Model (MTM) of Health Behavior Change to Predict Water Consumption Instead of Sugar-Sweetened Beverages. Journal of research in health sciences. 2017;17(1).
44. Sharma M, Catalano HP, Nahar VK, Lingam V, Johnson P, Ford MA. Using multi-theory model of health behavior change to predict portion size consumption among college students. Health Promot Perspect.2016;6(3):137-144. https://doi.org/10.15171/hpp.2016.22
45. Nahar, VK, Sharma M, Catalano HP, Ickes MJ, Johnson P, Ford MA. Testing multi-theory

[DOR: 20.1001.1.27832104.2017.1.2.4.2]

model (MTM) in predicting initiation and sustenance of physical activity behavior among college students. Health promotion perspectives. 2016;6(2):58-65. https://doi.org/10.15171/hpp.2016.11.

46. Knowlden AP, Sharma M, Nahar VK. Using multi-theory model of health behavior change to predict adequate sleep behavior. Family & community health. 2017;40(1): 56-61.

[DOR: 20.1001.1.27832104.2017.1.2.4.2]