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Effect of information technology and informatics on the treatment and control of type 2 diabetes

Diabetes is the fourth cause of death in the United States. Both IT and HI have been applied in the management of diabetes but their effect have been inconsistent. We used meta-analysis to identify a common effect of HI and IT across multiple studies on estimated average glucose (eAG). We found 370 articles based on search of randomized trials only. We excluded 328 articles, with 23 based on title and 305 based on abstract. We reviewed the full text of 42 articles that fit criteria for inclusion. After discarding 23 studies with incomplete information, we analyzed 19 articles. We estimated an IT and HI combined measure of reduction in eAG per mmol/L across 26 point estimates in 19 studies. We estimated a Hedges' g effect size across the 26 point estimates. IT- and HI-based strategies for patient engagement or clinical decision support included mobile, computer-based, e-mail and internet approaches. We found reductions in eAG per mmol/L due to combined IT and HI across all 19 studies. Reductions in eAG levels were statistically significant ($p\text{-value}\leq 0.05$) in 15 out of 26 estimates. The combined HI or IT eAG reductions per mmol/L averaged -0.716 ($-0.928, -0.503$) with values ranging from -0.08 to -2.02 . This average reduction in eAG values is equivalent to a 1.7% in A1c. We found a standardized effect size (Hedges' g) of 0.625 (0.434, 0.816) across all studies and estimates. Findings indicated both statistically and clinically significant effects of either IT or HI on diabetes prevention and control.

Biography

Eduardo J Simoes is the Chair and a Distinguished Professor in the Department of Health Management and Informatics, University of Missouri School of Medicine (2011-current). He has done his Medical degree from Faculdade de Medicina, Universidade de Pernambuco-Brazil (1976-1981), Diploma and Master of Science degree from the University of London School of Hygiene Tropical Medicine (1986-1987). He has done another Master's degree in Public Health from Emory University School of Public Health (1989-1991). He is a Fellow of the American College of Epidemiology, Reviewer and Editor for 12 journals. He has published over 100 peer-reviewed publications, 8 book chapters and 18 reports.

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