

## Structured Educational Programme as Strategic Intervention for Adults with Type 2 Diabetes to Control their Weight: A Literature Review

Golam Maola Moahmmad Faqruzzaman<sup>33</sup> and Muhammed Mostofa Khan<sup>34</sup>

### Abstract

The aim of this article is to understand the impact of the structured education programme on Type 2 Diabetes patient in controlling their weight. Diabetes is a common disease with long-term consequences. In 2014, there were around 422 million people with Diabetes in the world. Most of them were suffering for Type 2 Diabetes. Positive lifestyle change with education programmes can bring huge change for the patient with Type 2 Diabetes, physically and mentally. It is the most cost-effective way of dealing with the health concern. Secondary research was carried out by using EBSCOhost, MEDLINE and CINAHL Plus with full text to find the required peer reviewed journals for analysis. Only English written papers on adults were considered. A total of 9 papers were selected through systematic screening processes. In all 9 papers, the authors found visible health improvement, including weight loss or control. Every person is different in terms of their lifestyle and perception. Knowledge of diabetes and the consequence of the illness are limited among some people. Structured education programmes with planned follow-up would boost their knowledge level. This could help people to live with diabetes by following a healthy life style including by controlling weight.

**Keywords:** Type 2 Diabetes, education programmes, control group, intervention group, psychological factors, weight control.

### Introduction

Diabetes is a long-term disease which has personal and social implications on the patient (Bagnasco *et al.*, 2013). Every day the number of people with diabetes is increasing in the world and it has already reached 422 million in 2014, from 108 million in 1980 (WHO, 2017). In the UK, there were approximately 4.5 million diabetes patients in 2014 and 90% of them were suffering from Type 2 Diabetes (Diabetes UK, 2017). It is accountable for a large portion of health services expenses in the UK as well as the Europe (Gillett *et al.*, 2010). Every year around 10% of the total NHS budget is spent on diabetes (Gordon *et al.*, 2013).

There are found to be two types of diabetes, Type 1 and Type 2 Diabetes. Type 1 Diabetes is characterised by poor insulin production and Type 2 is the result of body's ineffective use of insulin (WHO, 2017). Both types of diabetes can lead to some serious long-term complications in eyes (retinopathy), hearts (cardiovascular diseases), kidneys (nephropathy) and nerves and feet (Diabetes UK, 2017). Changes in lifestyle and lifelong treatment are needed to deal with long term

implication of diabetes (Gæde *et al.*, 2008). However, long term lifestyle advices are difficult to maintain and patients find it difficult to implement these in their daily life (Morris, 2002). On the other hand, the National Service Framework (NSF) for diabetes emphasises on the structured education programmes for diabetes patients and National Institute for Health and Clinical Excellence (NICE) prescribed a guideline for NHS to offer structured educational programmes to all diabetes patients (NICE, 2017).

Several professional organisations recommended to start the education programme as early as possible after the diagnosis (Hawkins *et al.*, 2002). Education programmes are required to deal with diabetes as patients require long term care by professionals (Wagner *et al.*, 1996). This will help the people with Type 2 Diabetes to understand the consequences and required action. It will also motivate them to follow the self-management steps to ensure the positive impact of them. This research will help people with Type 2 Diabetes to understand the impact of structured education programmes. It will explore insight into education programmes and

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<sup>33</sup>. All correspondence to: [g.faqruzzaman@londonchurchillcollege.ac.uk](mailto:g.faqruzzaman@londonchurchillcollege.ac.uk)

<sup>34</sup>. All correspondence to: [m.khan@londonchurchillcollege.ac.uk](mailto:m.khan@londonchurchillcollege.ac.uk)

that will help the patients to deal with the self - management skills to live with the Type 2 Diabetes.

Literature reviews are important for any research. These allow the researcher to gain more knowledge on the selected topic area by collecting and reading the published work on that topic (Hart, 2012). There is much literature available for the health and social care professionals and researchers interested in a comprehensive study and interpretation of the relevant topic (Aveyard, 2014).

Three databases; CINAHL (Cumulative Index to Nursing and Allied Health), MEDLINE and EBSCOhost Research Database were selected for the study. MEDLINE, a production of National Library of Science, has a large database and provides links to the professional journals in the subject area of medicine, nursing and allied health (Blessing and Forister, 2013). CINAHL covers all aspects of nursing and allied health discipline includes, health education, emergency services, social services, health care, etc. CINAHL and MEDLINE are accessible in EBSCOhost. Type 2 Diabetes education and research on that topic is part of allied health or health education. Searching on MEDLINE, CINAHL or even on EBSCOhost will help the researcher to access the wide range of health education studies (Chambers, *et al.*, 2016). Peer-reviewed research papers were selected to ensure the reliability and validity of the research as this kind of research papers were reviewed by the experts of the relevant topics. In terms of research findings, reliability and validity are of significance (Brink *et al.*, 2009) as it ensures the acceptability or dependability of the information and the research. Certain key-words were used to find the required studies. Later CINAHL and Medline were also used (Table 1) to find the required research papers. As a result, an all-inclusive search strategy was developed to find the appropriate numbers of English studies for the literature review. Specific searching techniques were used to select the relevant research. Only papers from the last ten years were considered as the authors assumed these would provide substantial outcomes of the role and the use for this study.

After the research findings, relevant research inclusion and exclusion criterion were used to select the appropriate research for the study. Inclusion and exclusion criterion are the set of statements about the feature of studies that were or were not selected in the research for analysis (Card and Little, 2016). It will guide the

researcher about their selecting the right research. In addition, it will ensure the transparency of the literature selecting.

#### Inclusion criterion for the literature review

- English language studies
- Research using structured education as a specific set of programme with time frame
- Research using primary data
- Research involving Type 2 adult (18 years or over)
- Research working on health improvement including weight measurement
- Research published since 2006

#### Exclusion Criterion for the literature Review

- Non-English researches
- Research paper based on secondary sources
- Research involving children
- Research involving Type 1 Diabetes
- Research involving any other standard education
- Research published pre-2006
- Research did not analyse the weight measurement.

One of the major inclusion criteria is about structured education programmes. Only those education programmes were considered, which are conducted by the professionals, have a specific time frame, where the patient attendance is compulsory and which has a specific curriculum to cover (NICE, 2017). A major criterion is about the change in body weight. Only those research papers which implement education programme and observe body weight were selected. Eight research papers were analysed quantitatively and one was a mixed method study.

#### Findings

The outcome from the research findings are discussed into two parts. In the first part, the papers will be discussed based on the methodological aspect (quantitative or qualitative). In the second part, the findings will be discussed based on the concepts that emerged from the assessment of the literature regarding the role of structured education programme as an intervention to improve the health behaviour including weight control in the adult patient with Type 2 Diabetes.

Eight quantitative studies (three from UK, one each from Republic of Ireland, Japan, South Africa, Brazil and India) met the inclusion criteria as the tool to address the research aim

or research question. All eight papers were published in six different renowned journals<sup>35</sup>.

All eight researchers, except Davies *et al.* (2009), followed the similar method and covered the aim, method, result and conclusion in their abstract as suggested by Bhakar and Mehta (2011). Davis *et al.* (2008) explained some details about the method and result. They covered settings, participants, intervention and separate outcome measures in a separate paragraph. In all eight papers, except Clarke (2011), researchers assigned the participants either to the control group or to the experimental intervention group. Clarke (2011) included the entire population, referred by the local GPs, into one group. Prediction about the outcome was initially difficult for the researchers as there were many variables (age, lifestyle, health promotion) all of which had an impact on the participants. In all eight papers, researchers tried to find the impact or effectiveness of structured education programmes on the Type 2 Diabetes patients. Every researcher, except Bravis *et al.*, (2009) and Clarke (2011), used RCT (Randomised Controlled Trial) as their study. RCT is considered the gold standard and probably the best approach to generate the evidence for effectiveness in the research (Pearson, *et al.*, 1996). Bravies *et al.*, (2009) assigned the participants into two different groups (intervention and control) but they did not mention the process. Therefore, the design may have been subject to internal validity as suggested by Maree and Van der Westhuizen (2009).

The sampling technique has huge impact on the research. The way researcher selects the sample and the way they categorised them, affects the general acceptability of the research (LoBiondo-Wood and Haber, 2010). Quantitative research usually works with large sample size and the author should clearly define the process of determining the sample size. Mash *et al.* (2014) research on the basis of extending previous research, with the same population and based on the outcome and other determinants<sup>36</sup>; They used 36 clusters across the Cape Town and selected the large sample for the population. This proves the generalisation of their research.

Davies *et al.* (2008) used 207 General Practices in 13 primary sites of UK with 870 participants. Their extensive coverage with large sample size makes their research unique for other researchers. Deakin *et al.* (2006) decided to have 64 participants in each group to ensure their desired outcome. At the end, they recruited 157 in each group; 314 in total. Bravis *et al.* (2010) invited local people through the local Mosque, poster and leaflet distribution, to attend their education programme. The researcher did not mention their targeted number of sample to conduct the survey. On the other hand, they conducted a similar survey in many parts of the London to ensure the generalisation ability of the research.

Statistics provide the meaning of data, collected through the process. It allows the researcher to explain the outcome from different angles. Most of the quantitative papers included in this review used both descriptive and inferential statistics. Davis *et al.* (2008), Scain, Friedman and Gross (2009), Clarke (2011) and Deakin *et al.*, (2006) used the descriptive analysis (mean and standard deviation) to judge the outcome. Sadeghian *et al.* (2016) used both parametric and non-parametric tools including independent t-test, chi-square and McNemar's test. Bravis *et al.* (2010) used Graph Pad PRISM statistical package for their analysis. Mash *et al.*, (2014) used the linear regression for comparing continuous outcome and logistics regression for categorical outcomes. Moriyama *et al.* (2016) used inferential data analysis to compare some outcome in the intervention and control groups. Mash *et al.*, (2014) did not find any significant health improvement except the reduction in blood pressure in their study. However, they recognised that the large dropout rate (around 60%) and poor attendance rate with limited group activity in the educational programme can hamper the effectiveness of the study. They suggested that more targeted education with more intensive programme may improve the impact. On the other hand, Davies *et al.*, (2008) found the educational programmes highly effective. They found that the structured education programme helped the intervention group members to lose weight. It also showed improvement in smoking status, physical activity level and the wellness belief. They

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<sup>35</sup> The journal published by Mash *et al.* (2014), Bravis *et al.* (2009) and Deakin *et al.* (2006) were published in Diabetic Medicine UK. The paper written by Saeghian *et al.* (2016) was published in Turkish Journal of Medical Science. The paper written by Scain *et al.* (2009) was published in The Diabetes Educator and the paper written by Davies *et al.* (2008) was published in the British Medical Journal (BMJ).

Moriyama *et al.* (2009) published in Japan Journal of Nursing Science and Clarke (2011) published in European Journal of Nursing.

<sup>36</sup> The researchers were expecting 1360 participants and they ended up with 1570 participants.

intend to do a further study with the same group in three years' time to see the outcome.

Bravis *et al.* (2010) found the education programme to be successful. The Patients, who attended an education programme (READ), lost a significant amount of weight. However, they found that community links helped the researchers by motivating the patients to engage in the education programme. The researcher conducted the programme in the month of Ramadan and the participants were requested to attend the pre-Ramadan session. They also needed to visit the practice nurses during the Ramadan. As a result, the high involvement of all relevant parties made it a successful programme. In their approach, Bravis *et al.* (2010) attempted to integrate the need of the Muslim community in their programme READ. They delivered the programme in a different language with culturally diverse people. The participants received additional information about the self-management technique of the diabetes. According to the researchers, all these integrations worked positively for their study and they found their education interventions were clinically and statistically significant. Moriyama *et al.* (2009) found the same, particularly the intervention group had improvement in their body weight but the participants in both control and intervention group were poorly motivated to participate. They suggested that further improvement of the programme including the collaboration of other health professionals might improve the attendance.

Apart from the education programme Clarke (2011) used a questionnaire to find some qualitative information about the programme from the participants. Three major psychological factors came from the survey. The researcher analysed the information in mean and SD method and found significant improvement in the diabetes education, quality of life and empowerment understandings. The researchers had to remove some participants from the analysis as they did not fill up the evaluation form. This was one of the major limitations of that study. Finally, the researcher identified the need to focus on individual change rather than group change. The research showed a positive result for the entire group but it might not be the case for an

individual. Scain *et al.*, (2009) found that the impact of the education programme was significant at the end of the process but diminished from the third month onwards. They further argued that systematic education programmes can bring behavioural change but it is for short period and require periodical reinforcement to ensure the long-term effectiveness and suggested that the education programme should be repeated for the patients periodically (every 8 to 12 months) to be more effective.

Vincent (2009) conducted a survey on Mexican Americans in the USA<sup>37</sup>. This is mixed research where researcher collected data from the sample for the quantitative analysis and at the same time used part of the sample for qualitative study (focus group). At the end, he provided both qualitative and quantitative outcome. In the data source, he covered the sample size and qualitative study (focus group) but did not mention anything about quantitative research, though he mentioned this in the method section of the body. The study was based at a Community Health Centre Arizona, USA<sup>38</sup>. However, the inclusion and exclusion criterion were used to select the sample. He used the purposive sampling technique based on the health centre. The benefit of this technique could be availability of the information from the experience sample to serve the purpose of the researcher (Macnee and McCabe, 2008). In terms of quantitative data analysis, the researcher used both parametric and nonparametric testing including t-test, chi-square, ANCOVA and ANOVA. He did all tests to ensure the accuracy, though he had a small sample size. In terms of qualitative data analysis, he used content analysis (Adams *et al.*, 2012). The researcher found this programme to be beneficial for the participants. The average weight loss was significant. On the other hand, the control group gained weight. In terms of qualitative analysis the outcome was also significant. The writer tried to find the motivation of the participants and the participants showed positive attitudes towards the programme. Considering the financial condition of the participants, the writer tried to adjust the programme curriculum. He introduced additional physical activities like walking, rather than extra exercise like other researchers. The researcher also used pedometers to count the number of steps and

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<sup>37</sup>. The research is published in the Journal of the American Academy of Nurse Practitioners. The researcher is an Associate Professor of the University of Arizona College of Nursing.

<sup>38</sup>. The sample size was 20 but the researcher did not mention the reason behind selecting 20.

involved the family in the process. He conducted the programme in local languages and used someone from Mexican culture to help them. As a result, he received the positive impact of the programme.

The above literature review identified three main challenges for the successful implementation of the education programme for Type 2 Diabetes. The challenges are (1) motivations of the participants to attend the courses, (2) integration or involvement of the participants in the course curriculum and (3) the coordination of the relevant health and social care professionals. These three challenges raised concerns about the lack of coordination and lack of planning on the training programmes among the health and social care professionals, in three different ways. Firstly, there were no or few visible plans among the professionals to ensure patients participation. Secondly, the participants have few or no contribution to the course curriculum, which was made for them. Thirdly and lastly, the integration of GPs or Practice Nurses were not visible in any training programme.

Motivational approaches are relevant in any field to achieve any objectives. It is also important in the health and social care sector as the profession is dealing with vulnerable people. Ensuring safety and security of the service user is the key to the success for the health and social care professionals. That success will not be ensured without motivation of the service users. De-motivated service users will not work for the common goal of the safety and security nor will they help the organisation to achieve common objectives, in the targeted time. Maslow's 'hierarchy of human need theory' is one of the main motivational theories that academics refers to. It has been applied in many human development areas (Thew and McKenna, 2009). Motivational interviewing and counselling have been referencing this theory in the health and social care for long time and it is considered as an effective tool in dealing with health promotion (Resnicow *et al.*, 2002).

Integration or involvement of the service user is another important feature of health and social care. Person-centred care is one of the major approaches to ensure the involvement of the service users in the treatment process. Person-centred approach is person oriented with strength and skill base and quality of life oriented (Adams and Grieder, (2007). In the health care setting professionals should integrate the service user's ideas in the treatment plan to ensure the optimum success.

Integration of services is now a key objective of the national and international organisation in health and social care organisation. It helps all professionals and the service users to work together to ensure the set standards and criteria.

In the modern world, coordination is the heart of any partnership working. The effectiveness of the services in the entire health and social care sector depends on the partnership among the public, private and voluntary organisations as partnership without coordination will not work. There has been a strong requirement of coordination for the people with long term needs (Adams, 2007). The literature reviewed provides detail of the lack of coordination among the professionals in education programmes although present are example of good coordination among relevant health professionals.

### **Recommendations**

One of the conclusions that can be declared from this literature review is that Type 2 Diabetes patients are found to reduce their weight as long as they are in the education programmes. Health and social care professionals should work together with other professionals, service users and their family members to ensure the long-term effectiveness of the education programme. In most of the reviewed literature, it was found that there was a lack of planning in terms of the delivery of the education programme. Professionals plan for the programme curriculum, programme venue and target participants. No retention plan was visible in any of the literature and in some cases the dropout rate was significantly high. In most of the cases, service user's views or requirements were not heard in making the curriculum. Only two researchers from the literature review used their views and that had long-term impact. The success of any education programme always depends on the involvement of the participants. Motivated participants will always generate the long-term impact and this should be valued by the programme organisers to ensure the long-term success. One of the major problems found in all reviewed papers was the absence of GPs in the programme. The coordination of GPs is not visible apart from referring the patients to the programme. GPs are the first point of contact for any patients and involving them in the programme might generate some positive impact.

## Conclusion

Based on the literature review it can be said that the structured education programme could help Type 2 Diabetes patients. It could show and guide patients about using a healthy lifestyle to live with the disease. The literature review identified some key issues about the educational programmes, most of which could be easily rectified. Education is a key to any success and it has long term impact on people. On the other hand, though people do not want to live with a disease, they don't want to get bored with the programme either. This study will help participants to understand the benefits of education and at the same time, it will help the professional to understand the requirement of the retention plan with integrated services.

A future study that develops and adopts education programme in line with patient's expectation would be beneficial for all involved parties. This will help the researchers to have high participation rates and at the same time effectively use time and resources. This analysis may create the opportunity for other researchers to study on the non-participation of the education programme or the reasons behind the dropout.

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