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Investigating the feasibility and acceptability of health psychology-informed obesity training for medical students

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Health psychologists have succeeded in identifying theory-congruent behaviour change techniques (BCTs) to prevent and reduce lifestyle-related illnesses, such as cardiovascular disease, cancers and diabetes. Obesity management discussions between doctors and patients can be challenging and are often avoided. Despite a clear training need, it is unknown how best to tailor BCT research findings to inform obesity-management training for future healthcare professionals. The primary objective of this descriptive study was to gather information on the feasibility and acceptability of delivering and evaluating health psychology-informed obesity training to UK medical students. Medical students ($n = 41$) attended an obesity management session delivered by GP tutors. Sessions were audio-recorded to enable fidelity checks. Acceptability of training was explored qualitatively. Tutors consistently delivered training according to the intervention protocol; and students and tutors found the training highly acceptable. This psychology-informed training can be delivered successfully by GP tutors and further research is warranted to explore its efficacy.

Keywords: obesity; health psychology; healthcare training; medical education; feasibility and acceptability

Introduction

Behaviour change techniques [BCTs] are ‘observable, replicable, and irreducible component[s] of an intervention designed to alter or redirect causal processes that regulate behaviour’ (Michie et al., 2013, p. 2). Interventions using BCTs often aim to improve health and/or well-being and derive from established theories, covering many potential behavioural mechanisms (Abraham & Michie, 2008; Michie, Johnston, Francis, Hardeman, & Eccles, 2008). Patient-focused interventions applying this evidence base include those targeting smoking, healthy eating and physical activity (Dombrowski et al., 2012; Olander et al., 2013; Thijs, 2007; West, Evans, & Michie, 2011). Although research has considered optimal methods of training healthcare professionals in lifestyle behaviour change skills (Butler et al., 2013), the potential utility of translating

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comprehensive BCT frameworks (e.g. Dixon & Johnston, 2010; Michie et al., 2011) into practicable consultation tools is unexplored.

Internationally, 68% of males and 64% of females are estimated to have a BMI of ≥ 25 kg/m² (World Health Organisation, 2010); thus healthcare professionals are frequently expected to discuss behaviour change with overweight/obese patients (General Medical Council, 2009). However, obesity-management discussions can be challenging and are often neglected during consultations (Klein et al., 2010; Ma, Urizar, Alehegn, & Stafford, 2004). General Practitioners (GPs) report low confidence and skill in engaging in behaviour change discussions, perceived to jeopardise rapport with patients, take excessive time in consultations, or cause service disengagement (Chisholm, Hart, Lam, & Peters, 2012; Jochemsen-Van Der Leeuw, Van Dijk, & Wieringa-De Waard, 2011). Patients, however, report wanting and expecting doctors to discuss obesity with them, especially within the context of an existing health condition (Hart, Yelland, Mallinson, Hussain, & Peters, 2015).

A systematic review showed that existing understanding about BCTs has not yet been used to inform obesity-related medical education (Chisholm, Hart, Mann, Harkness, & Peters, 2012; Fillingham, Peters, Chisholm, & Hart, 2014); and medical educators have highlighted this as a key barrier to delivering such education to medical students (Chisholm, Mann, Peters, & Hart, 2013). It remains unknown how feasible it is to translate BCTs frameworks (Dixon & Johnston, 2010; Michie et al., 2011) into usable and practicable obesity-management education for future healthcare professionals. This descriptive study aimed to explore the feasibility and acceptability of delivering health psychology-informed obesity-management education to medical students. A secondary objective was to explore the feasibility of measuring medical students' intentions to discuss obesity management with patients before and after attending training.

Methods

Participants and procedure

Students in the final two years of a large UK medical school ($n = 682$) were invited via online advertisements to attend an obesity-management session. Forty-one students attended one of five sessions (7–10 per group). The authors trained eight GPs as tutors to align with usual curriculum delivery procedures and provide role models for students (Sternszus, Cruess, Cruess, Young, & Steinert, 2012).

Intervention

A three-hour obesity-management session was designed to prepare students to support patients in making changes to eating and activity patterns. Session content was informed by the existing BCTs research base (e.g. Dixon & Johnston, 2010; Michie et al., 2011). Central to this was the TENTPEGS framework – a booklet developed by the authors containing specific BCTs (Chisholm, Hart, Mann, & Peters, 2013). The overarching aim of the TENTPEGS framework is to make BCT literature more accessible and available to healthcare professionals and guide them to use it in a patient-led approach. Box 1 illustrates the overall structure of this framework.

Box 1. TENTPEGS framework (Chisholm, Hart et al., 2013).

Seven groups of BCTs illustrate different potential approaches to discussing change with patients:

- Taking down barriers (*e.g. identify barriers and problem solve, coping planning*)
- Environmental change (*e.g. avoidance, time out*)
- Thoughts and emotions (*e.g. reframing, decision-making, stress management*)
- Perform and practice (*e.g. habit formation, generalise behaviour*)
- Empowering people to change (*e.g. self-talk, past success*)
- Goal achievement (*e.g. graded tasks, set and review goals*)
- Social support (*e.g. social comparison, identification as role model*)

This framework also guides *how* to tailor health advice to individual patients by selecting BCTs which relate directly to patient cues.

Example

A patient indicates feeling overwhelmed to lose weight:

Patient: 'There's just so much to change I wouldn't know where to start'

The practitioner chooses to select 'graded tasks' as a relevant BCT to use in their response:

Practitioner: 'What small initial change might you want to make first? Perhaps we could discuss how to build this up over time'

Table 1 demonstrates how education theory principles were drawn upon and applied to the session (Kaufman & Mann, 2010; Schmidt, 1993; Swanwick, 2010).

Outcome measures*Feasibility*

GPs were selected to deliver the session; although known to be effective medical educators for students, the extent to which GPs could successfully translate this BCT-informed training into meaningful clinical contexts for students was unknown. Hence, sessions were audio-recorded to investigate training fidelity via tutors' adherence to the training session protocol. Each session component delivered by tutors was rated on a four-point scale (1 = not covered to 4 = full in-depth coverage). Actual time spent per component was recorded alongside recommended timings.

Acceptability

Following the training, students *and* tutors provided feedback about the session via phone/email. Open-questions elicited participants' views and experiences of the session content, structure and format. Email responses and verbatim transcripts of audio-recorded telephone interviews were synthesised using thematic analysis (Braun & Clarke, 2006). Patterns across the data-set were organised into emergent themes ensuring that the full breadth of participants' perceptions were captured. Three authors led and organised the analytic findings, refinement of themes, disagreements between analysts; and ambiguities in the data were raised and resolved via discussion during regular meetings with the full research team.

Students' intentions

Intentions to discuss obesity with patients were assessed to explore the feasibility of administering this measure within this setting. Thus, a Theory of Planned Behaviour

Table 1. TENTPEGS training session content and rationale.

Description of components	Aims and rationale of the session component
1. Introduction	Introduce students and tutors and signpost to the session structure (ice breaker, rapport building, enhance student engagement at outset). Raise curiosity in the subject by considering a patient story. Highlight relevance of topic to clinical context. Brainstorm about ‘why behaviour change?’ (self-directed and interactive learning)
2. Complexities of behaviour change	In-depth brainstorm tasks about 1) complex nature of behaviour change (grounded in personal experiences), and 2) impact of obesity-related behaviour to clinical roles (relevance within healthcare settings). Tutors draw upon clinical experiences to contextualise discussions within clinical contexts
3. TENTPEGS framework	Video examples of real patient stories (highlights consequences of positive / negative doctor-patient interactions). Explore TENTPEGS framework in detail in large group and discuss, using example, how tools could be integrated into doctor-patient interactions. Practice skills in large group with a video patient scenario, and then role-play in pairs, receiving feedback from peers and tutors throughout (enhancing self-efficacy - mastery and vicarious experience)
4. Summary	Reflection on new skills learned and used during training (building self-efficacy; reflective practice). Prompt thoughts about how training can be taken forward into clinical interactions with patients (enhancing relevance to immediate clinical context)

(TPB) questionnaire was developed congruent with established guidelines (Francis et al., 2004). The TPB proposes that attitudes (ATs), subjective norms (SNs), perceived behavioural control (PBC) and intentions (INTs) are key determinants of behaviours. Meta-analyses show that, on average, TPB constructs explain 27–50% of variance in intentions and 26–39% in behaviour (Armitage & Conner, 2001; Sutton, 2004); and it explains comparable levels of variance in clinicians’ behaviours (Eccles et al., 2006; Francis et al., 2009; Perkins et al., 2007). Twelve items directly measured TPB constructs using a seven-point Likert scale (strongly disagree – strongly agree).

Results

Feasibility

Adequate uptake was demonstrated, with 41 students attending the session (61.8% female; 55.9% British, 11.8% Chinese, 32.4% other ethnicity; mean age = 24 years, range = 22–28 years). Tutors facilitated five small-group sessions in pairs and delivered the session within time frames provided and in sufficient detail specified within the protocol (Tables 2 and 3).

Acceptability

Twelve participants (nine students; three tutors) provided qualitative data about training acceptability (Table 4). Students and tutors reported the session content was useful for practice and were satisfied with its delivery. Students reported that the session fulfilled expectations to learn behaviour change communication skills; they wanted more formal education on the topic; and valued session format and content. Tutors reported that

Table 2. Comparison between time allocated and time spent by tutors delivering the training intervention.

Training section	Time allocated (minutes)	Time spent by tutors ($n = 8$) Median (<i>range</i>) minutes
Introduction and rationale	25	23 (18–25)
Considering current challenges	40	32 (30–40)
TENTPEGS framework	100	104 (63–123)
Summary	15	6 (4–13)
Full session	180	170 (140–182)

Table 3. Fidelity rating regarding the depth to which session tasks were covered during five TENTPEGS training sessions.

TENTPEGS session tasks (total = 14 tasks)	Fidelity rating–depth of coverage (frequency of instances out of 70) * 5 sessions × 14 session tasks
1. Signpost to session structure 2. Case example 3. Introduce session objectives 4. Considering ‘why behaviour change’ 5. Brainstorm – Own behaviour change 6. Brainstorm – Impact on doctor’s role 7. Explore patient perspective video clips 8. Communication strategies to avoid 9. Helpful communication strategies 10. Group role-play 11. Role-play in pairs or 3’s 12. Reflection 13. Review session objectives 14. Discuss – What will you take away?	Full/in-depth ($n = 60, 85.7\%$)
1. Signpost to the session structure 3. Introduce session objectives 4. Communication strategies to avoid 13. Review session objectives	Adequate ($n = 4, 5.7\%$)
13. Review session objectives 9. Helpful communication strategies	Brief/shallow ($n = 2, 2.9\%$)
1. Signpost to the session structure 3. Introduce session objectives 13. Review session objectives 14. Discuss – What will you take away?	Not covered ($n = 4, 5.7\%$)

students were engaged in the session; that training activities were strengthened by drawing upon personal clinical experiences and that delivering the training positively impacted tutors’ own clinical practice.

Students’ intentions

Thirty-four (82.9%) of 41 students that attended the lifestyle change session completed the TPB questionnaire. Those who did not complete questionnaires arrived late to the

Table 4. Thematic analysis of acceptability data including students' and tutors' views and experience of training.

Theme	Illustrative quote
<i>Students' views</i>	
Fulfilled expectations to learn communication and behaviour change skills	I expected to gain insight into appropriate ways of broaching the subject of lifestyle change with a patient. This is something I definitely felt I came away from the session with. (Trainee 2) Expected to learn about techniques to facilitate behaviour changes in patients, definitely got this from the TENTPEGS technique. (Trainee 9)
Wanting more formal education on the topic	Think there should be more of it taught as a necessary part of course, especially as it is part of Tomorrow's Doctors. (Trainee 3) Overall an excellent session on a vital topic for day-to-day healthcare delivery; its importance should not be underestimated. (Trainee 9)
Valued session format and content	The mix of seminar and practical was nice, as there is a big difference between hearing about behaviour change and then actually doing it! (Trainee 1) Role play was a good way to start to practice what we had been taught. (Trainee 5) Provides a good framework of achievable goals in trying to attempt behavioural change. Provides good psychological argument to aid behavioural change. (Trainee 4)
<i>Tutors' views</i>	
Trainees were engaged in the session	I was kind of really struck by how receptive the students were in terms of, you know, they're not practicing doctors (GP1) They weren't sort of just sat back listening they were joining in and taking the discussion seriously (GP2)
Using clinical experiences to inform training	[GPs] put into context if they're teaching it ... and also getting the experiences from the students. I didn't really expect so many sort of examples they would be able to pull out from their own experiences, but it seemed to work quite well (GP2)
Reported impact on own clinical practice	Yeah definitely, a hundred per cent it [TENTPEGS framework] has ... I always remember the bit that says practice and perform so I try to get people to try something once and repeat the behaviour (GP1) I think it's good to go over the models that people use from the point of the GP exam. I think you targeted the right people – the GP trainees (GP3)

session or left before the end thus forgoing their ability to complete the measure. Cronbach's α determined internal consistency for TPB subscales (INTs $\alpha = .91$, ATs $\alpha = .56$, SNs $\alpha = .69$, PBC $\alpha = .71$). Wilcoxon signed-rank tests were conducted to assess pre- to post-intervention change. TPB scores increased following the education session and the associated effect sizes ranged from medium to large (Table 5).

Discussion

Although past research identified potentially useful methods of educating medical students in obesity-management knowledge and skills (e.g. Martino, Haeseler, Belitsky, Pantalon, & Fortin, 2007), this is the first study to explore how comprehensive BCT frameworks might be translated to provide healthcare professionals access to evidence-informed obesity-management strategies. The results suggest this obesity training informed by the TENTPEGS framework (Chisholm, Hart et al., 2013), is both feasible

Table 5. Change in students' ($n = 34$) intentions to discuss obesity with patients measured along TPB constructs, pre- and post-training.

TPB questionnaire subscale	Median		Wilcoxon signed rank test		Effect size ($r = Z/\sqrt{N}$)
	Pre	Post	Z	P value	
Intention	6	7	-3.847	.000	0.660
Subjective norms	6	6	-2.682	.007	0.460
Attitudes	6	7	-3.238	.001	0.555
Perceived behavioural control	5	6	-5.005	.000	0.858

and acceptable. Students reported satisfaction with the session content and structure, and tutors believed the training was valuable to students and their own practice. This supports other research suggesting that medical students find obesity training most relevant when delivered by GPs who may be perceived as role models for students, representing proximal career stages (Sternszus et al., 2012). Thus it can be argued that BCT-informed training can be successfully tailored for delivery by non-psychologists within medical education settings.

Findings indicate it is feasible to measure students' intentions to discuss obesity with patients within the context of this intervention. As previous evidence suggests that healthcare professionals' and students' beliefs may account for engagement in obesity discussions (Chisholm, Hart, Lam et al., 2012; Litva & Peters, 2008; Ma et al., 2004), it is important to measure valid outcomes along these constructs. It would be particularly interesting to measure students' PBC because health professionals' lack of confidence and preparedness to discuss obesity with patients features consistently within the literature (Chisholm, Hart, Lam et al., 2012; Laws et al., 2009; Thuan & Avignon, 2005).

Due to lack of control and likely selection bias within the sample we were unable to draw conclusions about training efficacy. The recruitment strategy potentially led to a self-selected group of students who could have been particularly engaged in the session (Salmon et al., 2007). Since only 12 participants provided acceptability data, the results cannot be generalised beyond this sample. This study does, however, outline training that draws upon existing BCT frameworks to equip medical students with behaviour change skills, a topic currently lacking in practice (Chisholm, Hart, Mann et al., 2012; Moser & Stagnaro-Green, 2009).

This study supports that health psychology-informed obesity training is feasible and acceptable to students and tutors. Further research is required to determine the potential impact of this intervention upon students' intentions to discuss obesity with patients, and to assess training efficacy in relation to professional practice. Proximal student-based outcomes should be determined before exploring patient outcomes (e.g. diet, activity or weight), in order to identify mechanisms by which this training may be effective.

Disclosure statement

No potential conflict of interest was reported by the authors.

References

- Abraham, C., & Michie, S. (2008). A taxonomy of behavior change techniques used in interventions. *Health Psychology, 27*, 379–387. doi:10.1037/0278-6133.27.3.379
- Armitage, C., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology, 40*, 471–499. doi:10.1348/014466601164939
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*, 77–101. doi:10.1191/1478088706qp063oa
- Butler, C. C., Simpson, S. A., Hood, K., Cohen, D., Pickles, T., Spanou, C., ... Rollnick, S., (2013). Training practitioners to deliver opportunistic multiple behaviour change counselling in primary care: A cluster randomised trial. *BMJ, 346*, f1191.
- Chisholm, A., Hart, J., Lam, V., & Peters, S. (2012). Current challenges of behavior change talk for medical professionals and trainees. *Patient Education and Counseling, 87*, 389–394. doi:10.1016/j.pec.2011.12.001
- Chisholm, A., Hart, J., Mann, K.V., Harkness, E., & Peters, S. (2012). Preparing medical students to facilitate lifestyle changes with obese patients: A systematic review of the literature. *Academic Medicine, 87* (7), 1–12. doi:10.1097/ACM.0b013e3182580648
- Chisholm, A., Hart, J., Mann, K. V., & Peters, S. (2013). Development of a behavior change communication tool for medical students: The ‘tent pegs’ booklet. *Patient Education and Counseling, 94*, 50–60. doi:10.1016/j.pec.2013.09.007
- Chisholm, A., Mann, K., Peters, S., & Hart, J. (2013). Are medical educators following General Medical Council guidelines on obesity education: If not why not? *BMC Medical Education, 13*, 53. doi:10.1186/1472-6920-13-53
- Dixon, D., & Johnston, M. (2010). Health behaviour change competency framework: Competences to deliver interventions to change lifestyle behaviours that affect health. Retrieved from <http://www.healthscotland.com/documents/4877.aspx>
- Dombrowski, S., Sniehotta, F., Avenell, A., Johnston, M., MacLennan, G., & Araújo-Soares, V. (2012). Identifying active ingredients in complex behavioural interventions for obese adults with obesity-related co-morbidities or additional risk factors for co-morbidities: A systematic review. *Health Psychology Review, 6*, 7–32. doi:10.1080/17437199.2010.513298
- Eccles, M. P., Hrisos, S., Francis, J., Kaner, E. F., Dickinson, H. O., Beyer, F., & Johnston, M. (2006). Do self-reported intentions predict clinicians’ behaviour: A systematic review. *Implementation Science, 1*, 28. doi:10.1186/1748-5908-1-28
- Fillingham, A., Peters, S., Chisholm, A., & Hart, J. (2014). Early training in tackling patient obesity: A systematic review of nurse education. *Nurse Education Today, 34*, 396–404.
- Francis, J., Eccles, M., Johnston, M., Walker, A., Grimshaw, J., Foy, R., ... Bonetti, D. (2004). Constructing questionnaires based on the theory of planned behaviour: A manual for health services researchers. Retrieved October 24, 2011, from <http://www.rebeqi.org/ViewFile.aspx?itemID=212>
- Francis, J. J., Stockton, C., Eccles, M. P., Johnston, M., Cuthbertson, B. H., Grimshaw, J. M., ... Stanworth, S. J. (2009). Evidence-based selection of theories for designing behaviour change interventions: Using methods based on theoretical construct domains to understand clinicians’ blood transfusion behaviour. *British Journal of Health Psychology, 14*, 625–646. doi:10.1348/135910708X397025
- General Medical Council. (2009). *Tomorrow’s doctors: Outcomes and standards for undergraduate medical education*. Retrieved from http://www.gmc-uk.org/education/undergraduate/tomorrow_doctors_2009.asp
- Hart, J., Yelland, S., Mallinson, A., Hussain, Z., & Peters, S. (2015). When is it ok to tell patients they are overweight? General public’s views of the role of doctors in supporting patients’ dieting and weight management. *Journal of Health Psychology*. Advance online publication. doi:10.1177/1359105315571974
- Jochemsen-Van Der Leeuw, H. G. A., Van Dijk, N., & Wieringa-De Waard, M. (2011). Attitudes towards obesity treatment in GP training practices: A focus group study. *Family Practice, 28*, 422–429. doi:10.1093/fampra/cm110
- Kaufman, D., & Mann, K. V. (2010). Teaching and learning in medical education: How theory can inform practice. In T. Swanwick (Ed.), *Understanding medical education: Evidence, theory and practice* (pp. 16–36). West Sussex: Wiley-Blackwell.
- Klein, J. D., Sesselberg, T. S., Johnson, M. S., O’Connor, K. G., Cook, S., Coon, M., ... Washington, R. (2010). Adoption of Body Mass Index Guidelines for Screening and Counseling In Pediatric Practice. *Pediatrics, 125*, 265–272. doi:10.1542/peds.2008-2985

- Laws, R., Kemp, L., Harris, M., Davies, G. P., Williams, A., & Eames-Brown, R. (2009). An exploration of how clinician attitudes and beliefs influence the implementation of lifestyle risk factor management in primary healthcare: A grounded theory study. *Implementation Science*, 4, 66. doi:10.1186/1748-5908-4-66
- Litva, A., & Peters, S. (2008). Exploring barriers to teaching behavioural and social sciences in medical education. *Medical Education*, 42, 309–314. doi:10.1111/j.1365-2923.2007.02951.x
- Ma, J., Urizar, G. G., Alehegn, T., & Stafford, R. S. (2004). Diet and physical activity counseling during ambulatory care visits in the United States. *Preventive Medicine*, 39, 815–822. doi:10.1016/j.ypmed.2004.03.006
- Martino, S., Haeseler, F., Belitsky, R., Pantalon, M., & Fortin, A. (2007). Teaching brief motivational interviewing to year three medical students. *Medical Education*, 41, 160–167.
- Michie, S., Ashford, S., Sniehotta, F. F., Dombrowski, S., Bishop, A., & French, D. P. (2011). A refined taxonomy of behaviour change techniques to help people change their physical activity and healthy eating behaviours: The CALO-RE taxonomy. *Psychology & Health*, 26, 1–20. doi:10.1080/08870446.2010.540664
- Michie, S., Johnston, M., Francis, J., Hardeman, W., & Eccles, M. (2008). From theory to intervention: Mapping theoretically derived behavioural determinants to behaviour change techniques. *Applied Psychology*, 57, 660–680. doi:10.1111/j.1464-0597.2008.00341.x
- Michie, S., Richardson, M., Johnston, M., Abraham, C., Francis, J., Hardeman, W., ... Wood, C. (2013). The behavior change technique taxonomy (v1) of 93 hierarchically clustered techniques: Building an international consensus for the reporting of behavior change interventions. *Annals of Behavioral Medicine*, 46, 81–95. doi:10.1007/s12160-013-9486-6
- Moser, E. M., & Stagnaro-Green, A. (2009). Teaching behavior change concepts and skills during the third-year medicine clerkship. *Academic Medicine*, 84, 851–858. doi:10.1097/ACM.0-b013e3181a856f8
- Olander, E. K., Fletcher, H., Williams, S., Atkinson, L., Turner, A., & French, D. P. (2013). What are the most effective techniques in changing obese individuals' physical activity self-efficacy and behaviour: A systematic review and meta-analysis. *International Journal of Behavioral Nutrition and Physical Activity*, 10, 29. doi:10.1186/1479-5868-10-29
- Perkins, M., Jensen, P., Jaccard, J., Gollwitzer, P., Oettingen, G., Pappadopulos, E., & Hoagwood, K. (2007). Applying theory-driven approaches to understanding and modifying clinicians' behavior: What do we know? *Psychiatric Services*, 58, 342–348. doi:10.1176/appi.ps.58.3.342
- Salmon, P., Peters, S., Clifford, R., Iredale, W., Gask, L., Rogers, A., ... Morriss, R. (2007). Why do general practitioners decline training to improve management of medically unexplained symptoms? *Journal of General Internal Medicine*, 22, 565–571.
- Schmidt, H. G. (1993). Foundations of problem-based learning: Some explanatory notes. *Medical Education*, 27, 422–432. doi:10.1111/j.1365-2923.1993.tb00296.x
- Sternszus, R., Cruess, S., Cruess, R., Young, M., & Steinert, Y. (2012). Residents as role models: Impact on undergraduate trainees. *Academic Medicine*, 87, 1282–1287. doi:10.1097/ACM.0-b013e3182624c53
- Sutton, S. (2004). Determinants of health-related behaviours: Theoretical and methodological issues. In S. Sutton, A. Baum, & M. Johnston (Eds.), *The sage handbook of health psychology* (pp. 94–126). London: Sage.
- Swanwick T. (Ed.). (2010). *Understanding medical education: Evidence, theory and practice*. Chichester: Wiley-Blackwell.
- Thijs, G. A. (2007). GP's consult & health behaviour change project: Developing a programme to train GPs in communication skills to achieve lifestyle improvements. *Patient Education and Counseling*, 67, 267–271. doi:10.1016/j.pec.2007.05.002
- Thuan, J. F., & Avignon, A. (2005). Obesity management: Attitudes and practices of French general practitioners in a region of France. *International Journal of Obesity*, 29, 1100–1106. doi:10.1038/sj.ijo.0803016
- West, R., Evans, A., & Michie, S. (2011). Behavior change techniques used in group-based behavioral support by the English stop-smoking services and preliminary assessment of association with short-TERM quit outcomes. *Nicotine Tobacco Research*, 13, 1316–1320. doi:10.1093/ntr/ntr120
- World Health Organisation. (2010) *WHO Global Infobase: Data for saving lives*. Retrieved September 16, 2010 from <https://apps.who.int/infobase/Indicators.aspx>