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Aim

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Editorial

Teen Sleep Deficit – a Global Epidemic impacting health

It is crucial to involve adolescents when targeting the problem of short sleep

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Sleep deficit is a global epidemic, in adults as well as among children and adolescents (1). The amount of sleep per night has decreased by one hour among children and adolescents worldwide during the last century (2).

Consequences

Sleep deficit is causing many psychological and physiological problems. Across age-groups, insomnia is a predictor for depression (3) and in adults sleep deprivation is linked with serious physical illnesses such as cardiovascular disease, diabetes, and hypertension, as well as an alarmingly increased risk for accidents (1). Additionally, short sleep duration among children and adolescents is associated with obesity (4) and poorer academic performance (5).

Recommendations

Relevant recommendations have been established for children and adolescents to reduce sleep problems (6). For healthy individuals with normal sleep, the American National Sleep Foundation suggests that appropriate sleep duration for newborns is between 14 and 17 hours, infants between 12 and 15 hours, toddlers between 11 and 14 hours, preschoolers between 10 and 13 hours, and school-aged children between 9 and 11 hours. For teenagers, 8 to 10 hours was considered appropriate, 7 to 9 hours for young adults and adults, and 7 to 8 hours of sleep for older adults (6). However, the implementation seems to be a challenge.

Challenges with implementation

There are many suggestions for how to solve the problem of sleep deficit and insomnia, including SoMe restrictions and even structural changes at societal level. For example, the American Academy of Pediatrics published 2014 a policy statement urging middle and high schools to adjust start times to permit students to obtain adequate sleep and improve physical and mental health, safety, academic performance, and quality of life, and suggested that middle and high schools not start before 8:30 AM (7).

It seems that if youths participate in sleep interventions, positive effects are seen, at least on increasing their knowledge about sleep. The problem is the low participation rate in such interventions. For example, when trying to limit the use of electronic media before bedtime, only 20% of the invited adolescents choose to participate (8).

Amongst others, low participation may reflect a pre-contemplation stage, proceeding to the stages of first changing attitude and then behavior when engaging in the process of changing unhealthy lifestyles. Clear and easy-to-information is required to support moving to the next stage (9).

Another part of the explanation may be involvement of addiction symptoms to the specific lifestyle of being reachable 24/7 for friends and family as well as us-

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ing amusement with TV-shows, YouTube clips, games or social media as identified in a recent study, which also mention the necessity of being able to study hard (often during nighttime) (10).

The good message is that generic tools exist on health promotion to describe and support the process of changing useful – also in case of addiction.

So how can we move forward?

Trying to implement interventions that are unattractive to teens does not seem to be the best way to make progress. Rather, we have to listen to the voices of the adolescents to create possible solutions to steer the worldwide epidemic of sleep deficit onto a healthier road that leads to adequate sleep. We also need to accept that some level of support is necessary to change lifestyle, but how?

Interestingly, the teens themselves point at new and very relevant solutions to improve implementation in their daily living. Recent focus group interviews suggest that teens find it important to prioritize sleep in spite of the reachable SoMe-lifestyle as mentioned above (10). Parental involvement was welcomed by the adolescents, both in the focus group interviews with teens at school (10) as well as in interviews with adolescents with experience of staying overnight in hospital (11).

The teens focus on a missing link between recommendations and implementation and welcome parental support as part of the solution. The next generation of research on sleep deficit and insomnia should involve both groups.

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Knowledge, Attitude and Practice of Breast Self-Examination among Female Undergraduate Students: A Cross-sectional Study

Khadija Nasidi Nuhu¹, Garba Saleh Ngaski²

Abstract

Objective This study was aimed to determine the knowledge, attitude, and practice of Breast Self-Examination (BSE) among female undergraduate students.

Methods Two hundred and thirty-seven female students were recruited in this cross-sectional survey, using multistage sampling technique. Data was collected using self-administered questionnaire designed by researcher and data was analysed using descriptive statistics.

Result The results showed that the majority of the respondents were between the ages of 21–25 years, 100% of the respondents were aware of breast cancer, 95.4% were aware of BSE while 203 (93.6%) would seek care if they discovered any abnormalities in their breast. However, 67.7% of the respondents practiced BSE.

Conclusion The respondents had good knowledge and a positive attitude toward breast self-examination; however, they did not practice BSE even though they know the benefit. Mass media provided the most information to these respondents about breast cancer and breast self-examination. It is recommended that further study should be carried out among market women to determine their level of knowledge and practice.

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Introduction

Breast cancer is a change in the histology of the breast tissue which results in the first noticeable symptom of breast cancer; a lump that feels different from the rest of the breast tissue (1). Globally, breast cancer is the most common cancer in women after skin cancer, representing 16% of all female cancers. The rate is more than twice that of colorectal cancer and cervical cancer and about three times that of lung cancer. Mortality worldwide is 25% greater than that of lung cancer in women, depending on the stage of cancer (2).

Breast cancer constitutes a major public health issue globally with over 1 million new cases diagnosed annually, resulting in over 400,000 annual deaths and about 4.4 million women living with the disease (3). It also affects one in eight women during their lives. Statistics available in Nigeria are largely unreliable because of

many factors that have not allowed adequate data collection and documentation; but according to numbers provided by Globocan in 2002, breast cancer is responsible for about 16% of all cancer related deaths in Nigeria (4). Late presentation of patients at advanced stages when little or no benefit can be derived from any form of therapy is the hallmark of breast cancer in Nigerian women (5). This is indeed a worrisome trend and it appears to be the norm in Nigeria.

Breast cancer is a part of the national cancer control plans in Nigeria, as WHO recommended early detection strategies such as screening by breast examination in low- and middle-income countries like Nigeria to increase the awareness of early signs and symptoms. Mammography screening is very costly and is feasible only in countries with good health infrastructure (6).

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Periodic evaluation of the knowledge, attitude and practice in a population group serves as an educational diagnosis in a population and provides an important way to measure changing beliefs and behaviours over time about breast self-examination. Information from knowledge, attitude and practice studies on breast self-examination may form an important element of the programme that ensures a data-driven, evidence-based approach for reducing incidences of breast cancer (7). The results from previous studies among community-dwelling women in Nigeria have poor knowledge of breast self-examination and this shows there is need for continues evaluation (1).

The available and advisable method for breast cancer screening worldwide are breast self-examination (BSE), clinical breast examination (CBE) and mammogram. However, in most of developing countries the routine screening mammographies are often unavailable (4). Breast cancer screening refers to testing otherwise healthy women for breast cancer in an attempt to achieve an earlier diagnosis. The assumption is that early detection will improve outcomes. Although the findings from a systematic review suggested that BSE results in no difference in risk of mortality from breast cancer (8), a review of case-control studies found that BSE might reduce this risk. Despite inconclusive evidence, it is believed that BSE makes women more breast aware (5), which in turn may lead to earlier diagnosis of breast cancer. A number of screening tests have been employed including; clinical and self-breast examination, mammography, genetic screening, ultrasound and magnetic resonance imaging (MRI) (9).

BSE is another choice for screening in developing countries with a poor resource setting like Nigeria. Furthermore, it is important to raise the awareness in the population and promote the knowledge of breast cancer. It is clear that awareness among women and increased knowledge and behaviour will decrease the stage of the disease upon presentation and improve the quality of life and survival which relate directly to the stage of disease (10). Breast cancer treatment and management is a big challenge in Nigeria largely due to limited resources and a poor health system. Early detection does not necessary depend on expensive diagnostic equipment in a country like Nigeria that do not have widely available mammography technology for mass screening; even if available they hardly function and are not affordable to most of the women. BSE if done can help diagnose more cases earlier.

In Nigeria breast cancer is usually diagnosed at a more advanced stage due to a gender factor and a culture of

silence and secrecy about breast cancer. Fear of dying combined with embarrassment, privacy, modesty, and cultural taboo of self-breast examination all play a role in low survival rates. The stigma-disclosure would jeopardize social standing and marriage for the family members. Moreover, lack of good quality health care, physicians, nurses and the lack of awareness on the importance of screening may contribute to the problem (11). Therefore, this study was conducted to investigate whether the female undergraduate student of Ahmadu Bello University, Zaria have the knowledge of BSE, their attitude toward it and if they practice breast self-examination.

Methods Participants

The respondents comprised a sample of 237 consenting female undergraduate students of Ahmadu Bello University, Zaria. They were sampled using multistage sampling techniques in the first stage. The list of all the female hostels and the total number of girls in each of the hostels was obtained. Amina Hall accommodates 1636 students, while Ribadu and Alex accommodate 936 and 864 students, respectively. In the second stage 119 students were selected from Amina Hall, 59 from Ribadu and 59 from Alex. The selection was done based on the sizes of the hostels and the number of students each hostel accommodates, which enhances representativeness in sampling. The systematic sampling technique was then used to select study participants from each hostel. In Amina Hall, 107 questionnaires were administered to the 8 main blocks and links, 12 for each main block, 11 for links by selecting 3 rooms at convenience from each of the floors. In Ribadu and Alex, the questionnaires were administered following the same pattern, but 59 were distributed for each hall. The hostels were divided into 10 clusters and in each cluster a block was selected, and later rooms were selected based on simple random technique in this descriptive cross-sectional survey. The study was conducted within a six-month period, (March 2018–September 2018) and 237 questionnaires were administered.

Ethical approval was sought and obtained from Ahmadu Bello University Teaching Hospital ethical committee. Informed consent was also obtained from the participants prior to the commencement of the study.

Instruments

The instrument used in this study was a structured self-administered questionnaire that consists of 23 items. The questionnaire had the following sections: socio-demographic (four questions), knowledge (ten



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questions), attitude (three questions), and practice (six questions). Most of the questions were close-ended types. The questionnaire was developed by one of the researchers. Content validity was done for the instruments by the expert in nursing departments of Ahmadu Bello University, Zaria. The questionnaire was self-administered. A scoring system was used to grade the level of knowledge on breast self-examination into good, fair, and poor knowledge. Seven questions were asked, and each carried one mark. A score of 5-7 marks was considered as good knowledge, 3-4 fair knowledge and 0-2 poor knowledge. Data was presented using descriptive statistics such as frequency and percentage.

Results

Socio-demographic

The majority of the respondents (122; 56.2%) fell within the age group 21–25 years while the least (2; 0.9%) were in the age group >35 years. Fifty-eight (26.7%) of the respondents were Hausa, 40 (18.4%) Yoruba, and 17 (7.8%) Igbo as shown in table 1.

Table 1. Socio-demographic characteristics of respondents n=217

		Frequency	Percentage (%)
Age (years)	16-20	65	30.0
	21-25	122	56.2
	26-30	24	11.1
	31-35	4	1.8
	>35	2	0.90
Ethnic group	Hausa	58	26.7
	Igbo	17	7.8
	Yoruba	40	18.4
	Others	102	47.0
Marital status	Married	27	12.4
	Single	190	87.6
Religion	Islam	122	56.2
	Christianity	95	43.8

Knowledge of Breast Self-Examination

A large number of respondents (152; 70.10%) had good knowledge on breast self-examination, 55 (25.3%) had fair knowledge and 10 (4.6%) had poor knowledge. All the respondents were aware of breast cancer and the majority (148; 41.1%) obtained their information about breast cancer through the mass media. The smallest proportion of participants (20; 5.6%) reported their source of information about BSE to be “others” which include reading it from textbooks and being taught in the classroom. Most of the respondents (138; 30.9%) indicated that they believed the cause of breast cancer to be family history and the minority (18; 4.03%) reported the cause to be early age at first menses.

One hundred and sixty-nine (77.9%) of the respondents identified females as the group affected by breast cancer. Most of the respondents (207; 95.4%) were aware of the breast self-examination and the highest number of respondents 118; 35.5%) got their information about BSE through health personnel as shown in table 2.

Table 2. Showing the knowledge of respondents towards breast self-examination n=217

Questions	Frequency	Percentage (%)
Causes of breast cancer		
Spiritual	28	6.3
Advanced age	34	7.6
Family history	138	31.0
Not giving birth	24	5.4
Early age at 1st menses	18	4.0
Late age at menopause	26	5.8
Eating fatty food	54	12.1
Cigarette smoking	64	14.4
I don't know	60	13.5
Features of breast cancer		
Lump	200	36.9
Swelling	86	15.8
Pain	120	22.1
Nipple discharge	50	9.2
Change in nipple shape	50	9.2
Wound on the breast	28	5.2
I don't know	8	1.5
Gender affected by breast cancer		
Females only	169	77.9
Males only	2	0.9
Both males and females	34	15.7
I don't know	12	5.5
Age group commonly affected		
<25	18	8.3
26-50	121	55.8
>50	20	9.2
Any age group	58	26.7
Sources of information about BSE		
From friends	70	21.0
From relatives	32	9.6
From mass media	92	27.7
From health personnel	118	35.5
Others	20	6.0

Attitude towards Breast Self-Examination

The majority of the respondents 203 (93.6%) would seek care by going to the hospital if they discover any abnormality, 4 (1.8%) of the respondent would go to the traditional herbalist. Two hundred and seven (95.4%) of the respondents believed that breast self-examination is beneficial while 4.6% revealed that they did not find it beneficial as shown in table 3.



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Table 3. Showing the attitude of respondent towards breast self-examination

Questions	Frequency	Percentage (%)
Place of seeking care		
No where	0	0.0
Mosque/church	10	4.6
Traditional herbalist	4	1.8
Hospital	203	93.6
Benefit of breast self-examination		
Yes	207	95.4
No	10	4.6
Total	217	100.0

Practice of Breast Self-Examination

A majority of the respondents (147; 67.7%) practiced breast self-examination while 32.3% of the respondents did not. For those that practice breast self-examination. One hundred and five (71.4%) of the respondents stated their reason for practicing BSE to check for lumps, while 27 (32.9%) did not practice BSE because of lack of awareness and orientation. Of the 147 respondents who practiced breast self-examination. The majority 51 (34.7%) of the respondents practiced BSE every month as shown in table 4.

Table 4. Showing the practice of breast self-examination by respondents

Questions	Frequency	Percentage (%)
Practice of BSE		
Practice BSE	147	67.7
Do not practice BSE	70	32.3
Reason for practice		
Check for lumps	105	71.4
Advised by health personnel	12	8.2
Family history of cancer	5	3.4
Status of breast	20	13.6
Prevention is better than cure	5	3.4
Reason for not practicing		
Lack of awareness	23	32.9
No time	27	38.6
Forgetfulness	15	21.4
Non-challant attitude	5	7.1
Interval of practice		
Every day	34	23.1
Every week	22	15.0
Twice a month	20	13.6
Every month	51	34.7
Twice a year	6	4.1
Others	14	9.5
Duration of practice		
<1 year	70	47.6
1–5 years	50	34.0
>5 years	27	18.4

Discussion

A total of 217 questionnaires were analysed. The majority of the respondents were between the ages of 21–25 years (56.2%). About 87.6% of the respondents were single constituting the highest percentage of respondents while only 12.4% were married. The possible limitation of the study is that the questionnaire is self-administered as this can be influenced by participants and some participants has not returned the questionnaires.

Regarding awareness of BSE, it was discovered in this study that 95.4% of the respondents are aware of BSE which is similar to the findings of the study by Ayed et al. (12), where 97.3% of the respondents were aware of BSE. The level of awareness may be due to the level of education of the participants as our study was carried out among undergraduate students. The findings also partly agree with the finding of the study carried out in Enugu Central where 73.5% of the respondents had heard of breast self-examination (13). On the other hand our findings are in contrast with the findings of a study carried out in Qassim region of Saudi Arabia (14), to assess knowledge, attitude and practice of breast self-examination where 69.7% of the participants have never heard of BSE. The differences may be that the participants in this study, were drawn from the university while the participants in the Saudi Arabian study were drawn from the general population.

Regarding source of information, mass media was their main source of information in this study which is corroborate to the findings of a study conducted in Ilorin, Northern Nigeria by Salaudeen et al. (15,16), where 97.2% of the respondents reported the electronic and print media as their first source of information regarding breast cancer, and slightly in agreement with a study carried out in Enugu Urban cities which showed that 92% of the women were aware of breast cancer (13). The finding is also similar to the finding in a study carried out to access the knowledge, attitude and practice of self-breast examination among nursing students in Lagos University Teaching Hospital, Nigeria, where 97.3% of the respondents were aware of breast cancer and the majority of the respondents had gotten their information from the mass media (15). Our finding is in contrast with that of a study by Ali et al. (14), on knowledge, attitude and practice of Nigerian women towards breast cancer among Nigerian women in a semi-urban neighbourhood in Nigeria where study participants had poor knowledge of breast cancer. This may be due to difference of the participants; in our study the participants were drawn from female undergraduate stu-



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dents, this may explain the variation in knowledge of the participants.

On the features of breast lumps most of the respondents were aware that a breast lump was a feature of breast cancer. The finding is in contrast with that of a study by Ali et al. (14), where only few of the participants knew that breast cancer presents commonly as a painless breast lump. Also, the finding is in contrast with the finding of Okobia et al. (1). This may be connected with the level of education of our participants. Education may tend to give women more knowledge on features of breast cancer when compared with other participants whose level of education was lower. Regarding the benefits of breast self-examination, most of the respondents believed that breast self-examination was of benefit while only few believed that BSE was of no benefit. Most of the participants in this study practiced BSE monthly, which was similar to the finding in the study by Ali et al. (14).

The present study also showed that the majority of those who practiced BSE did it to search for lumps which is similar to the findings of Salaudeen et al. (15). Similar to the findings of Ayed et al. (12), it was also observed that most of the respondents who did not practice BSE, did not do it because they thought it is a nonchalant attitude, e.g. some of them thought they were violating their bodies by palpating their breasts.. Because It was also observed that 32.9% of the respondents did not practice BSE because of lack of awareness which is in contrast to the findings by Ayed et al. (12), where most of the respondents, (87.5%) reported that they had not carried out BSE because they did not know how to do it. It was found out in this study that 67.7% of the respondents practiced BSE of which 34.7% practiced it monthly. Their awareness of BSE makes them practice it. Therefore, awareness is an important factor in determining the success or failure of BSE. WHO advocate more health education in countries where mammography screening is not available (6), and WHO also recommend BSE as an early strategy for detection of breast cancer in a poor resource setting like Nigeria, therefore, more health education is needed among health care providers to increase the awareness of breast cancer and BSE in the country.

From the findings of the study, the participants had good knowledge of BSE, positive attitude toward breast self-examination but some of the participants did not practice BSE even though they knew the benefit. Although inconclusive, evidence suggest that practicing BSE does not provide early detection, but it may help in rising awareness among women and remain

the only mean of screening in middle- and low-income countries (11). Mass media provided the most information to these women about breast cancer and breast self-examination. The implication of this study is that more health education is needed on the importance of BSE and clinical breast examination among women, this will help increasing the awareness of breast cancer among women. It may also lead to early detection of disease. It is therefore recommended that further studies should be carried out among market women to determine their level of knowledge and practice.

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Fast and well-reported implementation: Fast-IM and RE-AIM

Jeff Kirk Svane¹⁺², Lars Konge³, Hanne Tønnesen¹⁺⁴

Abstract

Background Implementation in healthcare is often slow and poorly reported. Results include suboptimal outcomes and adverse consequences for patients. However, promising tools to remedy implementation speed and reporting already exist – such as the evidence-based, fast-track implementation model (Fast-IM) and the comprehensive RE-AIM (reach, effectiveness, adoption, implementation, and maintenance) reporting format.

Methods In combination, Fast-IM and RE-AIM may constitute a new best practice for fast and well-reported implementation. The aim of this article was to visualize the feasibility of the combination in practice via 3 examples concerning smoking cessation among patients, simulation-based training of healthcare professionals, and mandatory regulation.

Results Combining Fast-IM and RE-AIM is feasible and provides a useful overview of both implementation process and results.

Conclusion This article describes a new best practice for fast and well-reported implementation by combining Fast-IM and RE-AIM.

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Introduction

Implementation in healthcare is a global challenge, and a delay of upwards of 17 years has been described (1-2). Also, comprehensive reporting and follow-up on implementation-rates are rare (3). Failure to implement new evidence has severe consequences for patients such as suboptimal outcomes and adverse events (4), for instance by way of effective services not received (5-7) or sufficient training not undertaken by the staff that treat them (8).

Concerning implementation speed, the 1-year, fast-track implementation model (Fast-IM) has shown promise (9-11). Concerning comprehensive reporting of implementation results, the RE-AIM (reach, effectiveness, adoption, implementation, and maintenance) framework provides an easy and generalizable method for measurement of obtained results across healthcare (12-14) (3).

Combined, Fast-IM and RE-AIM might form a new best practice for fast and well-reported implementation.

The aim of this article was therefore to visualize the feasibility of the combination of Fast-IM and RE-AIM for fast and well-reported implementation via three examples concerning smoking cessation among patients, simulation-based training (15), and mandatory regulation.

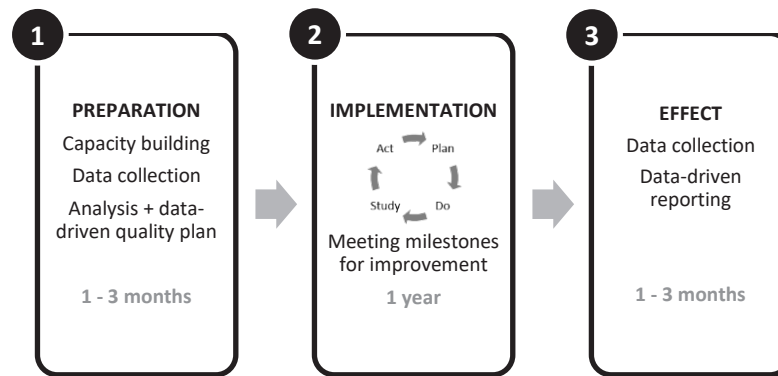
Fast-IM and RE-AIM

The Fast-IM (Figure 1 and Table 1) was originally devised to support implementation of health promotion in healthcare in just 1 year. It was shown to deliver significant implementation results in an international, multi-center randomized trial (9-11).



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Figure 1: The Fast-IM with its 3 steps



Fast-IM appears robust across different clinical departments and countries as well as in tough-to-implement areas requiring active patient-involvement (12). It also appears acceptable and welcomed by staff, managers, and patients (16).

Table 1: The three steps of the Fast-IM in detail

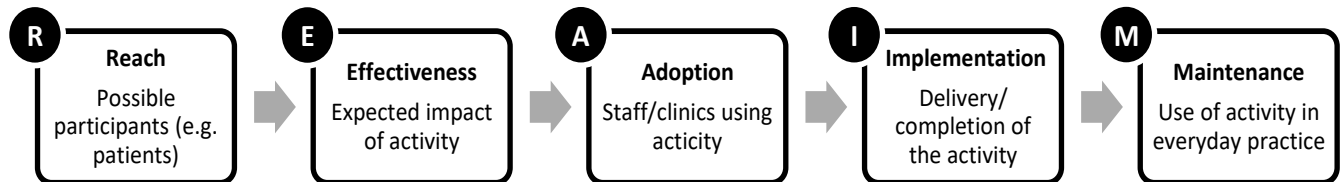
1	PREPARATION	1 – 3 months:
	Capacity building	A small implementation group (staff/management) is established to lead the next steps and take part in a 4-hour workshop on using the Fast-IM
	Data collection	On the new evidence, clinical guideline, intervention, action or policy to be implemented
	Analysis + data-driven quality plan	On data and using it to drive quality plan priorities and milestones for evaluation
2	IMPLEMENTATION	1 year:
	Meeting milestones for improvement	Implementing using the plan-do-study-act cycle (PDSA) and following up every 3 months according to selected milestones from the quality plan
3	EFFECT	1 – 3 months:
	Data collection	Repeated (from step 1) and on all parameters regardless of priorities in the quality plan
	Data-driven reporting	On data from repeat collection using RE-AIM. Comparison with baseline (from step 1)

The RE-AIM framework of Glasgow and colleagues (3) (12-14) (Figure 2) is a practical tool for reporting on implementation. It has been widely-used in implementation science (3) (14) and supports internal and external decision-making. RE-AIM's original 2-year maintenance period is adaptable (13) and thus Fast-IM compatible (i.e. 1 year).



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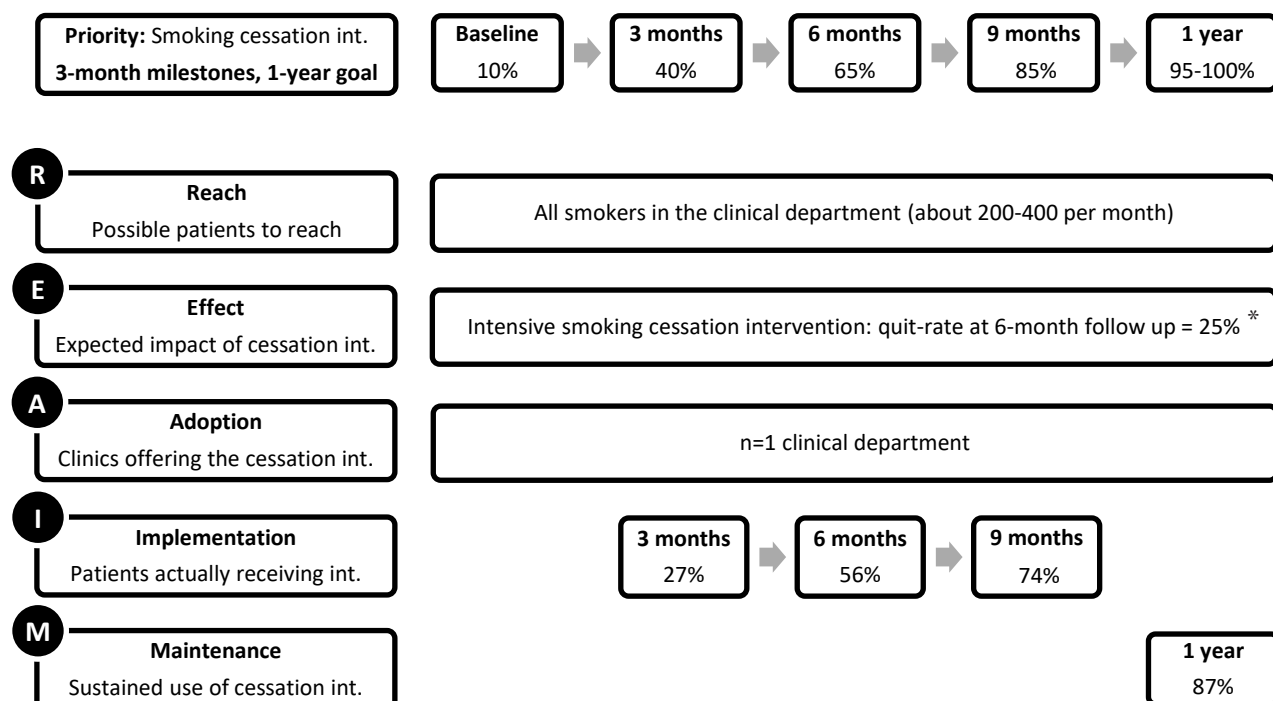
Figure 2: RE-AIM with 5 dimensions to report on



Examples of use

To describe use of the best practice combination, Figures 3, 4 and 5 provide simple examples on use of Fast-IM for fast implementation and comprehensive RE-AIM reporting. The first example covers implementation of intensive smoking cessation intervention to smoking patients in a clinical department (Figure 3). The second example shows simulation-based training implemented for performance of colonoscopy (Figure 4). The third example shows information, e-learning and subsequent tests implemented to ensure mandatory compliance with the General Data Protection Regulation (GDPR) in a hospital (Figure 5).

Figure 3: Fast-IM and RE-AIM: Implementing intensive smoking cessation intervention (Int)



* Rasmussen M, Fernández E, Tønnesen H. Effectiveness of the Gold Standard Programme compared with other smoking cessation interventions in Denmark: a cohort study. *BMJ Open*. 2017;7(2):e013553. Published 2017 Feb 27. doi:10.1136/bmjopen-2016-013553



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Figure 4: Fast-IM and RE-AIM: Implementing simulation-based (sim) training for colonoscopy

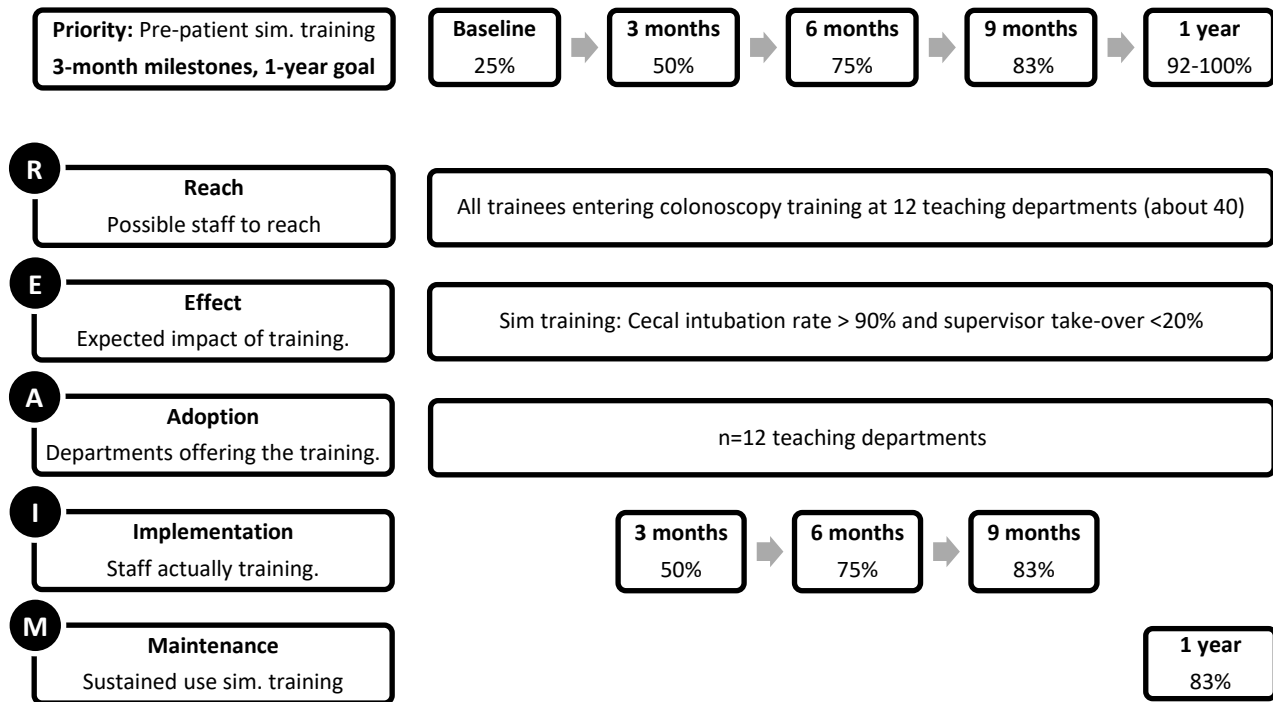
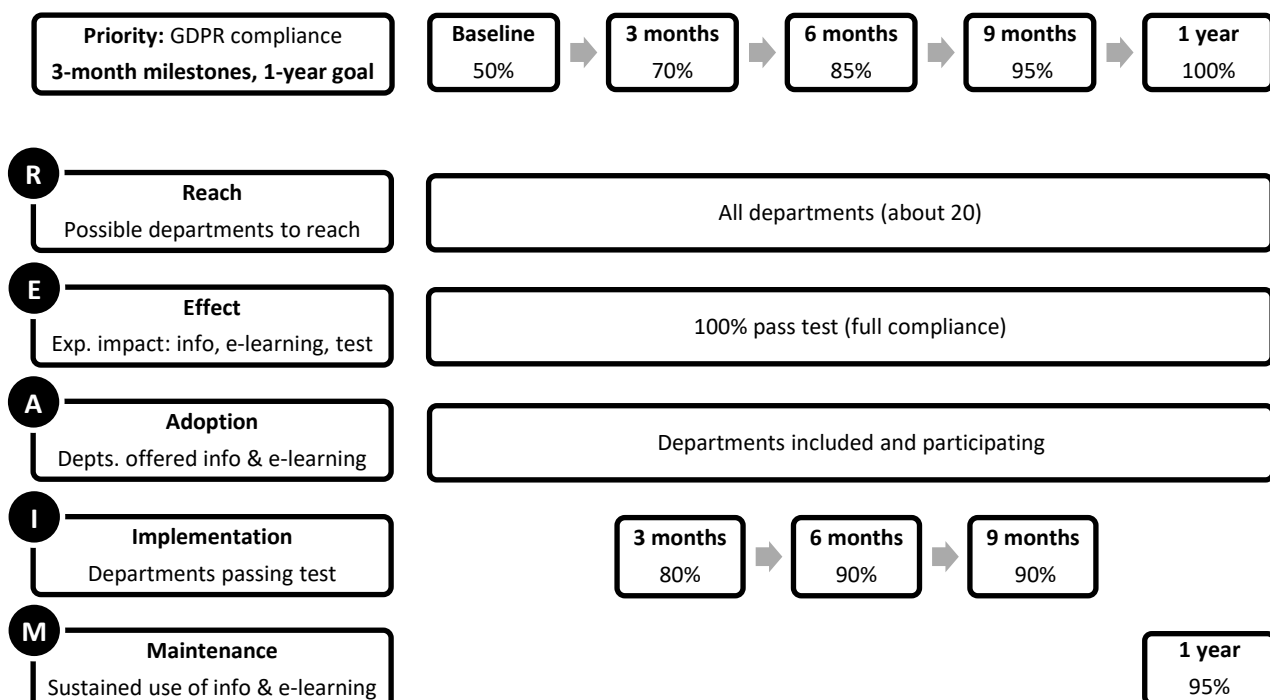


Figure 5: Fast-IM and RE-AIM: Meeting the mandatory General Data Protection Regulation





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Conclusion

This article describes a useful and feasible best practice for fast and well-reported implementation by combining Fast-IM and RE-AIM. It was shown how the combination might look in practice, when implementing e.g. smoking cessation, simulation-based training or mandatory regulation. It was also shown how a department might be able to show their progress in terms of implementation over time, vis a vis selected 3-month milestones from the Fast-IM, and 1-year implementation results.

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Evaluating a healthy lifestyle training program for a group of China medical students

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Abstract

Introduction Learning and developing a healthy lifestyle through training are crucial for individual wellbeing in the long run to prevent lifestyle-induced diseases. The study aimed to screen participants' health risk indicators and evaluate the effectiveness of a healthy lifestyle training course for them.

Method A cross-sectional design was used to evaluate an 8-hour structured healthy lifestyle course over one week. The course was conducted for 48 China medical students during their learning visit in Hong Kong in August 2017. A case scenario of potential lifestyle-induced health problems and workbook were provided for participants' discussion, reflective learning, practice and application. Health risk indicators measurement was demonstrated for their self-measured analysis and awareness of risks with lifestyle intervention. Their health learning experience was evaluated by 12 questions posed after training.

Results Participants' indicators were measured and identified at moderate/high health risks which included overweight 15% (7/47), lifestyle-related hypertension 45% (21/47), excessive stress 13% (6/48), lack of adequate exercise 94% (44/46) and inadequate sleep 50% (23/46). A Pearson Correlation of BMI to Metabolic Age Gain is positive (coefficient=0.726, $p<0.001$). The participants strongly agreed that the learning method facilitated their health practice and enhanced their interest to change lifestyle habits in the learning process.

Conclusion Education of healthy lifestyle for healthcare students is pivotal to prevent and control lifestyle-induced non-communicable diseases as a global concern. Training and coaching with reflective health practice are effective in skills learning for health gain and recommended to other healthcare professionals and community population of patients, family, staff and students.

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Introduction

The number of individuals suffering from NCDs is rising rapidly which poses severe threats to the cost of the healthcare system and individual well-being world-wide. NCDs account for the three leading causes of global years of life lost in 2013, which are ischemic heart disease, and cerebrovascular disease (1). More alarmingly, and almost all the top nine causes of global death in 2015 were NCDs as well (2).

Lifestyle can be a major risk factor of NCDs. Deroose (1998) found out that seven negative lifestyle habits including unhealthy eating, sedentary lifestyle, inadequate sleep, or unrelieved stress, smoking and excessive use of alcohol could predispose healthy age reduction and early death (3). Thus, to prevent

lifestyle-induced diseases, learning and developing a healthy lifestyle through training is crucial for individual wellness in the long run.

Translating reflection and practice in the healthy lifestyle course

Reflective learning or reflection involves intellectual and affective activities, theory and practice, in which individuals engage to explore their experience and feeling or self-awareness, evaluate and analyze for new understanding and insight, appreciation of strength and weakness, and expected action in future (4, 5). It can be divided into reflection-on-action or reflection-in action. This type of learning process and practice can be used both within and outside the profession of nursing (6). This is an effective and vital

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way of learning especially in healthcare professional education with hands-on skill practice to acquire new perspective through critical analysis of a given case or event in the learners' reflection process (6).

Educators' view and the use of reflective practice have been investigated in the field of nursing education and profession. The findings showed that nurse educators integrating reflective learning in their clinical teaching can elicit positive learning outcome and new insight throughout their practice of laboratory or clinical skills experience by students (7, 8). The education mode has also been used in public health and implemented by nurses to work with a family in partnership and collaboration (9). Its benefits on the program quality and learning outcome need to be further examined and its advantage among health seekers is still uncertain. Therefore, this education method was integrated into our healthy lifestyle course for a screening of participants' health indicators at risks and learning of lifestyle skills aiming to achieve effective health gain.

Study aim and objectives

The study aimed to screen participants' health indicators at risk and to assess their learning experience after participating a healthy lifestyle training course. The health indicators for screening at risks and learning included Body Composition, Lifestyle-induced Hypertension Risks, Mental Stress and Health Habits.

Method

In August 2017, we conducted a 10-hour healthy lifestyle course for a group of 48 medical students seeking health practice during their one-week learning visit in Hong Kong. The training and learning process were described as follows:

- Lectures and workshops on nutrition and exercise, hypertension, stress relief, and health belief were offered.
- Structured learning activities with health materials in a workbook design were administered to the participants.
- A case scenario of a family potential lifestyle-induced health problems was included for discussion, analysis, and application in lifestyle practice.
- The training contents were taught and learning activities were facilitated by a physician, a health nurse educator, and a dietitian.
- Potential or actual health problems in the case scenario were discussed among six groups with eight members for each.

- Demonstration and return-demonstration were performed hands-on practice to measure their individual health risk indicators.
- The outcome measure indicators included participants' body composition, blood pressure, mental stress and health habits associated with healthy age.
- Questions and discussion are facilitated in the workshops schedule over one week on the skill practice of measurement equipment and scale for their indicators and perceived benefits in predicting personal healthy lifestyle.

Ethical consideration

Ethical approval has been sought from the Hospital Administration and Chaplaincy Department of Hong Kong Adventist Hospital - Stubbs Road for data collection, dissemination, evaluation and release of different health training and development programs. These programs aim for training participants to adopt a healthy lifestyle to prevent and control common chronic diseases or improve their health state. The participants could be a hospital and corporate staff, patients, family, clients in the community, and/or overseas professional visitors. The data collection process fulfills Health Promoting Hospital International Network requirements and Australian Council of Health Standards for hospitals and complies the hospital policy HKAH-SR MERD-011 Release of Information (10). The data may be used for publication in newsletters, evidence-based health, or research journals of which had been explained to participants with their written or verbal/implied consent as appropriate.

Summary measures

To evaluate the effectiveness and quality of the healthy lifestyle course, 12 questions were posed to elicit the participants' health learning experience at the end of the training program. To collect their responses, the questionnaire was evaluated by a 7-point Likert scale. The questions covered the topic, workbook contents, notes, course length, teaching preparation, learning, facilitation, and guidance. To evaluate the participants' confidence and sustainability of their health learning experience, on top of the program structure, participants were asked to evaluate if their expected learning needs were met; their interest in healthy lifestyle has increased or not; lastly, whether the program could assist in changing their lifestyle which shaped them for effective health gain.

To assess the health indicators of participants, health screening activities were conducted. Skills demonstration with return demonstration of how to measure



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individual health indicators for evaluation included manipulation of the body composition and blood pressure measurement machines, questionnaires for mental stress and health habits. These were presented in four workshops and the 48 students were divided into eight groups for discussion and team works to complete the assigned self-measured indicators and their questions were addressed. Health indicators measured for practice in related discussion of the given case scenario included were:

- 1. Body composition risks** of participants were self-measured by a Tanita Machine (11). The health risks were determined by their gender, real age and metabolic age, body fat, visceral fat index and BMI.
- 2. Hypertension risks** were self-measured by the Lifestyle-induced Hypertension Risks Rating Scale scoring of contributing factors and their blood pressure measured by a machine for comparison (12).
- 3. Mental stress risks** were self-assessed by a Mental Stress Scale consisted five categories of a 17-item questionnaire developed by the Department of Health Hong Kong (13). The five categories including time-induced stress (3 items), work performance (4 items), personal emotion (3 items), temper tantrums (3 items), and self-induced guilt (3 items) were summarized with a graded risk score.
- 4. Health habit risks** were self-evaluated by a Healthy Ageing Questionnaire (3). This is a 7-item personal health habit questionnaire including adequate sleep, eating breakfast every day, no snacks, drinking alcohol or smoking, normal body weight and regular exercise. Their BMI and metabolic age were also measured and correlated. These provided substantial evidence in figures for them to understand how individual overweight or obesity can affect their metabolic age and health state. Their health habits were briefed of how to associate with a healthy age in the learning process (3).

Statistical analyses

All the statistical analyses, including descriptive comparison and correlation test, were carried out in SPSS Version 22 (15). The statistical tests were two-tailed, and the effect would be considered as statistically significant when the p-value was smaller than 0.05 (confidence level = 95%).

Results

Key health indicators of the participants divided into six groups were conveniently self-measured and fruitfully discussed during the workshop activities. Among the 48 participants, a majority (77% (37/48)) of them were female. All of them aged between 20 and 23 (100% (48/48)). A summary of our structured healthy lifestyle training plan, learning activities and outcome measures were exhibited in Appendix 1.

1. Body Composition

From the body composition measurement results, 4% (2/48) of participants had excessive body fat and 15% (7/47) of them were found to be overweight. None of them had excess visceral fat. Regarding waist size measurement, 23% (11/47) of them was found at risk of central obesity.

2. Hypertension

By measuring a list of non-modifiable and modifiable contributing factors of hypertension for the participants (N=47 missing value=1), the overall risks of the participating groups were scored and rated (see Table 1a and Table 1b). The screening results of the students with moderate-to-high risk factors for lifestyle-induced hypertension were BMI 5% (7/47), fruits and vegetables consumption 89% (42/47), saturated fat intake 94% (44/47), salt intake 85% (40/47), and exercise performance 93% (44/47).

Overall hypertension risks were scored and rated at an increased risk (scoring 50-70) of 45% (21/47) among the participants. The estimation of increased hypertension risks using lifestyle-induced factors is higher than the actual measured blood pressure for the participants having pre-hypertension of 24% (11/47) and hypertension 2% (1/47) (see Table 1b and Table 1c).

Table 1a. Hypertension Risks Rating by Participants (N=47 Missing Value=1)

Hypertension Risk Factors	A Low	B Moderate	C High
1. Age	47 (100%)	0 (0%)	0 (0%)
2. Ethnicity	0 (0%)	47 (100%)	0 (0%)
3. Family history	22 (47%)	22 (47%)	3 (6%)
4. BMI	40 (85%)	7 (15%)	0 (0%)
5. Fruits and vegetables	5 (11%)	25 (53%)	17 (36%)
6. Saturated fat	3 (6%)	31 (66%)	13 (28%)
7. Salt	7 (15%)	40 (85%)	0 (0%)
8. Alcohol	47 (100%)	0 (0%)	0 (0%)
9. Regular Exercise	3 (7%)	17 (36%)	27 (57%)



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Table 1b. Lifestyle-induced Hypertension Risks of Participants (N=47, Missing Value=1)

Scores	A summary of hypertension risks rating	
0	Very Low Risk	0 (0%)
10-40	Low Risk	26 (55%)
50-70	Increased Risk	21 (45%)
80-100	High Risk	0 (0%)
Total:		47 (100%)

3. Mental Stress

A scale of 0-none-1-sometime-2-always was used to measure the mental stress level of 17 lifestyle items (2). The "always" stressful lifestyle items concerned and perceived were grouped into five categories for the analysis of the participants' stress responses (N=48, see Table 2a and 2b).

To sum up, a minority of the participants 13% (6/48) (scoring 16-34) were found to rate above average stress level as measured by the Mental Stress Scale.

Table 1c. Blood Pressure Measurement and Rating for participants (N=47, Missing Value=1)

Systole/Diastole (mmHg)	A summary of blood pressure rating	
120-90 / 80-60	Normal	35 (74%)
120-139 / 80-89	Pre-Hypertension	11 (24%)
≥140 / 90	Hypertension	1 (2%)
Total:		47 (100%)

Among the five categories (relaxation, worry, symptoms, social relationship, and negative feeling) of stress related items, the most frequently reported was their study load and parents' expectation.

Table 2b. A Summary of Mental Stress Rating N=48

Very Low	Low	Average	High	Very High	Total
0-5	6-10	11-15	16-27	28-34	
4 (8%)	16 (33%)	22 (46%)	5 (11%)	1 (2%)	48 (100%)

Table 2a. Mental Stress Rating by Participants (N=48)

Stress Items Description	Participants' Response	
Scores: (2) Always - (1) Sometimes - (0) Never	(2) Always	
A1 Homework/job in hand is too much	14	29%
A2 No time to relax, always think about homework/job	16	33%
A3 Cannot waste a minute for works, same as a drive to rush across red light across the road	2	4%
Stress items A	32	67%
B1 Too much homework/job/activities for perfect works	7	15%
B2 Feel angry when losing games (e.g. playing chess/sports)	2	4%
B3 Perceive teacher/boss/family do not appreciate what has been performed	4	8%
B4 Worry about comments of parents'/peer's own performance	13	27%
B5 Worry current financial situation	11	23%
Stress items B	37	77%
C1 Often with headache/cervicodynia/back pain/stomach	8	17%
C2 Control own's unsettled emotion by smoking/drinking/eating snacks	2	4%
C3 Inadequate sleep/need to take drugs for insomnia	4	8%
Stress items C	14	29%
D1 Some classmates/family/friends/colleagues always making you to loose temper	4	8%
D2 Always interrupt others during conversation with others	0	0%
D3 Lots of worry before sleep even in the weekend having break	3	6%
Stress items D	7	15%
E1 Feel guilty of own decision/action without consideration	9	19%
E2 Feel guilty when taking leisure time	5	10%
E3 Often feel that you should not enjoy/play	8	17%
Stress items E	22	46%



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4. Health Habits

The participants assessed their seven personal health habits and learnt the relationship between their health habits and healthy age. The health educator demonstrated how to match their health habits to a healthy age with a table of statistics rating (3). Half of the participants (50% (23/46)) did not have enough sleep; a minority of them (15% (7/46)) did not have breakfast every day; more than half (67% (31/46)) would consume snacks regularly; about a minority (15% (7/46)) were overweight; however, a great majority was (93% (43/46)) without regular exercise; only 2% (1/46) had regular alcohol consumption; none had the habit of smoking. See Table 3 for a summary of the seven healthy habits deficit.

Furthermore, the participants' metabolic age gain was obtained by subtracting their metabolic age measured by Tanita from their real ages (see Figure 1). They learnt that a positive correlation existed between BMI and metabolic age gain. From the results, a Pearson

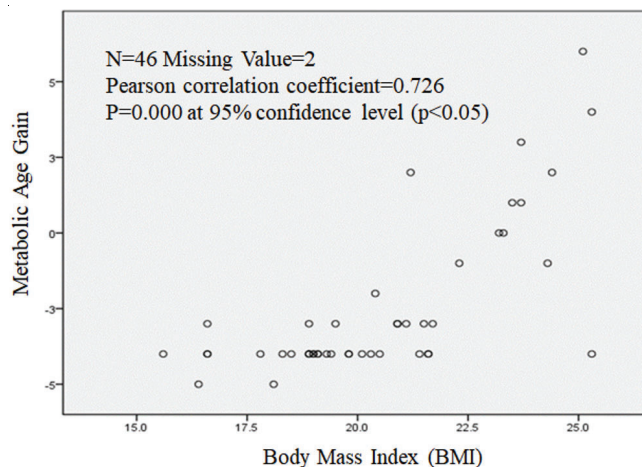
Table 3. Healthy Age and Lifestyle Habits of Participants (N=46, Missing Value=2)

	Not Achieved	Achieved
Adequate Sleep	23 (50%)	23 (50%)
Everyday Breakfast	7 (15%)	39 (85%)
No Snack	31 (67%)	15 (33%)
Normal Body Weight	7 (15%)	39 (85%)
Regular Exercise	43 (93%)	3 (7%)
No Alcohol	1 (2%)	45 (98%)
No Smoking	0 (0%)	46 (100%)

Table 4. Healthy Lifestyle Course Evaluation (N=48)

Evaluation Contents	Extremely Agree	Verily Agree	Agree	Total
1. Meeting expectations and learning needs	6 (13%)	20 (42%)	21 (54%)	47 (100%)
2. The topic is properly enriched	7 (15%)	17 (36%)	23 (49%)	47 (100%)
3. The content is clear and easy to understand	2 (4%)	18 (38%)	27 (58%)	47 (100%)
4. The training notes are moderate and reasonable	6 (13%)	22 (47%)	19 (40%)	47 (100%)
5. Lecture time is appropriate	7 (15%)	13 (28%)	27 (57%)	47 (100%)
6. Preparation is adequate	2 (4%)	10 (21%)	36 (75%)	48 (100%)
7. Teaching skills are professional	3 (6%)	15 (31%)	30 (63%)	48 (100%)
8. Learning is guided	4 (8%)	13 (27%)	33 (69%)	48 (100%)
9. Questions are answered	2 (4%)	13 (27%)	33 (69%)	48 (100%)
10. This training will increase your interest in or consolidate healthy living	2 (4%)	13 (27%)	33 (69%)	48 (100%)
11. This training method will assist you in changing lifestyle habits	3 (6%)	10 (21%)	35 (73%)	48 (100%)
12. I will support more health promotion activities	5 (10%)	9 (19%)	34 (71%)	48 (100%)

Table 3. Body Mass Index and Metabolic Age of Participants



correlation coefficient of 0.726 was calculated using SPSS version 22 and it was significant at 95% confidence level ($p < 0.01$) (15).

5. The quality and effectiveness of healthy lifestyle training

Forty-eight participants took part in a healthy lifestyle course and responded to a learning evaluation questionnaire after training. Each item was graded on a scale from 5 (extremely agree) to 1 (extremely disagree). All the participants responded positively (13% (6/47) extremely agreed - 42% (20/47) verily agreed - (45% (21/47) agreed) that their expected learning needs were met. See Table 4 for the evaluation results. The overall learning feedback of participants was positive and fruitful after the health training.



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Discussion

The tour learning visit in Hong Kong was a group of China medical students aiming for health training with lifestyle method. Our structured and innovative method provided a classroom and workshop learning mode for them to acquire screening skills of some key and self measured indicators with identified out-of-range figures. Reflective learning and practice was also incorporated in four workshops with one theme each meaningful for the students. The health issues were shared and discussed for learning purpose through this training method.

About one quarter of the students indicating overweight, a minority had excessive body fat or at risk of central obesity, and their metabolic ages were also identified. These indicators were personally meaningful and alert them of how their lifestyle habits could result in out-of-range indicators. A small proportion of 15% (7/47) of the participants' body weight was found over the normal range and a minority 4% (2/47) had excessive body fat. It is important that body fat in excess needs to be controlled at an early stage to prevent obesity and three highs induced complication.

Almost half of the participants (21 (45%)) were at moderate to high risks of hypertension. These can be contributed to their improper intake of saturated fat, salt, fruits and vegetables and exercise frequency (see Table 2). In the long run, these lifestyle risks are noteworthy of early attention before hypertension develops in the end.

One third 29% (14/48) of the participants had above-average stress which was most likely due to the workload of their study. Long term mental stress is detrimental to individual well-being which results in depression and other emotional problems (14). During their professional training, the medical students might come across a great deal of psychosocial distress and anxiety leading to improper lifestyle habits (14) and consequently, health-related quality of life plays an impact upon their study and wellness (15). To improve stressful study load, it is recommended to integrate structured health teaching into healthcare professional's existing curriculum over a cohort period to sustain individual health gain.

Seven health habits in Derose's study (1998) (3) were related to healthy age gain in the ageing process (3). The participants' health habits and healthy age gain were also estimated to enhance their interest in healthy lifestyle. The group members shared and discussed with guidance to understand how their lifestyle habits

could affect healthy age and metabolic age (see Figure 1). Half of them (50% (23/46)) within a normal range of BMI demonstrates substantial positive metabolic age gain which was due to healthy lifestyle habits. Moreover, they were also aware of non-achieved lifestyle habits such as their inadequate sleep 23% (23/46), snack intake 67% (31/46), over bodyweight 15% (7/46) and lack of regular exercise 93% (43/46) could contribute to hypertension risks and more chronic health problems in the long run.

Health experience, learning and practice

Our evaluation showed that a great majority of the student 100% (48/48) ranging extremely verily-agreed that (i) the training method would increase their interest in a healthy lifestyle; (ii) assist them in changing lifestyle habits; and (iii) support more similar health promotion activities. They gave positive feedback which tends to motivate their healthy lifestyle and learning experience at completion of the course.

The classroom and workshops settings provided a structured training program with health experience for self-measurement of simple and user-friendly indicators related to lifestyle habits meaningful to participants. Potential or actual chronic health problems based on the case scenario were discussed, disseminated, and applied among the participants. Their out-of-range health indicators triggered their alertness and attention, made them become aware of self-care improvement, individual weakness and strength identified, and developed new insight from the facilitated reflective learning process (7). Positive health learning experience was gained by participants from their reflective learning and practice in the workshops.

The health education and training method in reflective practice mode could be integrated into public health nursing, lifestyle medicine education (16), or existing nursing curriculum of primary health care to booster individual health gain (9). Further exploration in the field of public health and other healthcare education with structured health teaching and clinical health promotion is recommended.

Limitation

Although the participants' health indicators were measured and screened, some limitations should not be overlooked. First, the use of a Likert scale in the questionnaire for evaluation may be susceptible to central tendency bias. When eliciting responses with the Likert scale, a questionnaire with respondents' results may aggregate in the middle of the scale. Second, the participants' confidence level to conform



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to healthy lifestyle habits has not measured; a trial control or cohort design will provide stronger evidence of effective lifestyle change than this cross-sectional study for sustainable health outcome. Third, some important metabolic indicators including hyperlipidemia and hyperglycemia were not measured which are also common lifestyle-induced risks. Forth, the reliability and validity of the scales to measure hypertension risks, mental stress and unhealthy age should be addressed more vigorously.

Conclusion

Our health education and promotion program are designed for a group of healthcare learners, and medical students in this study with screening activities on their own in a learning mode. Their lifestyle related health risks of eating pattern, exercise frequency, high stress level in their study needed to be personally addressed. Reflective learning experience aroused their interest and alarmed for healthy lifestyle practice. This training and coaching method is recommended for public health nursing and lifestyle medicine education to prevent and control lifestyle induced diseases in a cost-effective manner.

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Appendix 1. Summary of structured healthy lifestyle training plan, learning activities and outcome measures

Health Risks & Learning Activities	Learning Activities (Theory & Practice)	Duration (hour)	Measurement Tools (Reference)	Indicators	Outcome Measures
Body Composition	Health knowledge Input, Case Discussion, Self-measurement (Demonstration & Returndemonstration) & Reflection	2	Tanita Machine (11)	gender, real age and metabolic age, body height, body weight, body Fat, visceral fat index, BMI	Figure 1
Hypertension	Health knowledge Input, Case Discussion, Self-measurement (Demonstration & Returndemonstration) & Reflection	2	9-item questionnaire (12)	age, ethnicity, family history, BMI, fruits and vegetables, saturated fat, salt, alcohol, regular exercise	Table 1a, 1b, 1c
Mental Stress	Health knowledge Input, Case Discussion, Self-measurement (Demonstration & Returndemonstration) & Reflection	2	17-item questionnaire (13)	relaxation, worry, symptoms, social relationship, negative feeling	Table 2a,2b
Health Habits	Health knowledge Input, Case Discussion, Self-measurement (Demonstration & Returndemonstration) & Reflection	2	7-item questionnaire (3)	adequate sleep, everyday breakfast, no snack, normal body weight, regular exercise, no alcohol, no smoking	Table 3
Activities Summary & Learning Experience	Self-evaluation of Health Learning Experience	2	12-item questionnaire	training method, positive health learning experience	Table 4



Comments on New Research on Clinical Health Promotion

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A systematic review highlights the need to improve the quality and applicability of trials of physical therapy interventions for low back pain

Cashin AG, Lee H, Bagg MK, et al. PLoS ONE 2019; 14:e0216402. doi:10.1371/journal.pone.0216402

Low back pain (LBP) is a common health problem all over the world and responsible for both acute and long-term sick leave. Over time, numerous intervention studies have been performed, however, ranging widely in research quality.

Study description

In a recent systematic review Aidan Cashin and co-workers have assessed the methodological quality and applicability of studies evaluating the effect of physical therapy interventions for low back pain.

The review included 2,215 trials, which mainly concerned adults having LBP without known aetiology.

The results showed that despite improved research quality over time, still less than half of the trials used concealed allocation or intention-to-treat analyses and about one third reported blinded assessors. Furthermore, blinding of participants or therapists took place in less than one of ten and one of fifty trials, respectively.

Comments from Professor Robin Christensen

“Cashin et al has performed an elegant meta-research project in order to assess the trajectory of methodological quality (internal validity) of randomised controlled trials testing physiotherapy interventions for low back pain.”

After reviewing the reporting standard for 2,215 trials, Cashin et al revealed that trial methodology (at least the reporting) in general has improved over time, but we still need greater emphasis on methodological features, such as allocation concealment and the reporting of intention-to-treat effects is urgently needed. Since improvement of these internal validity issues are doable, continued ignorant performance of trials (with these bias elements) testing physiotherapy interventions for low back pain should be deemed wasteful.

This is in contrast to the bias elements related to “performance bias” (masking aspects, such as blinding of patients and personal), which is in my opinion not easy to fix; these interventions are in general not feasible to mask, thus this particular bias domain will probably not be eliminated any time soon.

Further recommended reading:

- (1) Elisabeth Ginnerup-Nielsen, Robin Christensen, Kristian Thorborg, Simon Tarp, and Marius Henriksen. Physiotherapy for pain: a meta-epidemiological study of randomised trials. Br J Sports Med 2016 Aug;50(16):965-71. doi: 10.1136/bjsports-2015-095741.
- (2) Berthelsen DB, Ginnerup-Nielsen E, Juhl C, Lund H, Henriksen M, Hróbjartsson A, Nielsen SM, Voshaar M, Christensen R. Controversy and Debate on Meta-epidemiology. Paper 1: Treatment effect sizes vary in randomized trials depending on the type of outcome measure. J Clin Epidemiol. 2020 Jul;123:27-38. doi: 10.1016/j.jclinepi.2019.10.016. Epub 2020 Mar 23. PMID: 32217079