



Practise till you drop: Trialing an online intervention for late-career medical practitioners to promote planning for retirement

Anna Mooney^{a,*}, Chanaka Wijeratne^{b,c}, Joanne Kaa Earl^a, Jill Gordon^d

^a Faculty of Medicine, Health and Human Sciences, Macquarie University, Sydney, NSW, Australia

^b Faculty of Medicine, University of New South Wales, Sydney, NSW, Australia

^c Sydney School of Medicine, University of Notre Dame, Western Australia, Australia

^d NSW Doctors Health Advisory Service, St Leonards, NSW, Australia

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ABSTRACT

Many medical practitioners in Australia work beyond the traditional retirement age. Transitioning to retirement is important, however, because the likelihood of poorer clinical outcomes increases with practitioner age. The objective of the present study was to develop and trial an online educational intervention to promote planning for a smoother transition to retirement using a non-randomized control group pre- and post-test design. Medical practitioners aged 55 or over ($N = 262$, $Age = 61.9$) and working 30 or more hours per week were recruited to complete four online modules that addressed a range of topics (physical, health, financial, social, cognitive, and emotional well-being) and encouraged planning for retirement resources. Outcome measures included work centrality, mastery, and goal perceptions across the aforementioned resource domains. Eighty-one doctors completed post-training measures; a control group who completed only the measures ($n = 23$) and a training group ($n = 58$). Pre-post comparisons showed no significant changes for the control group. However, the training group at Time 2 showed lower work centrality $t(57) = 2.12$, ($p = .036$), and changes to social $t(57) = 2.35$, ($p = .022$), emotional $t(57) = 3.18$, ($p = .002$) and health goal perceptions $t(57) = -2.02$, ($p = .049$). Controlling for baseline scores and self-selection bias determinants, Generalized Linear Model (GLM) analyses indicated a training group increase in mastery scores ($\beta = 0.87$, $p = .045$) and decrease in negative perception of the consequence of not meeting emotional goals ($\beta = -0.37$, $p = .043$). Although not significant, GLM results also showed an increase in resources, three of four health goal domains and financial goals, indicating the potential for positive training effects in future applications of the program. The online retirement planning resource showed promise in promoting a sense of mastery and a reassessment of retirement plans, taking into consideration resource accumulation and goal setting across five specific goal domains. We discuss the theoretical and practical implications of our findings.

1. Introduction

In Australia, many doctors work beyond the typical retirement age. In 2016, 9.1% of the medical workforce was 65 years of age or older (Australian Government, 2017). Since 2004 the total number of doctors over age 65 has increased by 80% (Medical Board of Australia, 2017). While late career practitioners provide valuable experience and wisdom, progressive, subtle age-related declines in cognition and motor skills may go undetected for many years (Skowronski and Peisah, 2012; Black, 2017) possibly due to the compensatory effects of knowledge, experience, and reputation (Ganapathy, 2019). The Medical Board of Australia has observed higher rates of notification to regulatory authorities and

decline in performance (e.g., patient outcomes, knowledge, and adherence to standards of practice in screening, diagnosis and treatment) as practitioners age. The board has therefore raised the prospect of introducing a routine health check, including cognitive screening, for all practitioners aged 70 and over (Medical Board of Australia, 2017).

While there is an abundance of reasons in the literature for why doctors continue to work (e.g., medicine as part of one's identity, later career start), few studies have examined retirement intentions of medical practitioners (Wijeratne et al., 2017a). For doctors with no plan for retirement in place, an unexpected departure from practice can be devastating (Black, 2017). Results of a study by Wijeratne et al. (2017a) raised concerns about the retirement intentions of Australian medical

* Corresponding author at: Department of Psychology, Macquarie University, NSW 2109, Australia.

E-mail address: anna.mooney@mq.edu.au (A. Mooney).

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practitioners aged 55 and over. Wijeratne and colleagues' cross-sectional investigation revealed that almost 40% of doctors had no intention (11.4%) or were unsure (26.6%) about retiring, with the lowest odds of retiring being found among psychiatrists and general practitioners. Of the doctors who indicated a retirement intention, 33% did not nominate a specific retirement age. Furthermore, Wijeratne et al. found that international medical graduates, those with greater work centrality, and those with fewer emotional resources were less intent on retiring.

One aspect of the traditional culture of medicine is to continue to work indefinitely. A number of practical responses have been suggested to support ageing doctors in ongoing practice (e.g., reduced workload, greater flexibility, transition to mentoring or teaching roles etc.) (Lillis and Milligan, 2017). By contrast, medical practitioners are not usually encouraged to plan for retirement, even though such planning is clearly important for the welfare of both doctors and patients, and has implications for doctors' adjustment to retirement.

The current study is significant in focusing on a hitherto neglected topic; namely, the transition of late-career practitioners approaching retirement – a topic that the profession continues to neglect the importance of at both institutional and individual levels. We developed an online educational program consisting of four modules that can be used as a tool for transitioning to retirement from a career in medicine. The program drew on research findings grounded in a theoretical framework that identified the resources critical in determining successful adjustment to retirement (Leung and Earl, 2012; Wang et al., 2011). According to this resource perspective, an increase in resources promotes adjustment and well-being, whereas a decline in resources has the opposite effect (Wang et al., 2011).

Increasingly evident is the effectiveness of internet-based interventions in assisting users to obtain intended beneficial outcomes, including clinically relevant changes (Andersson and Titov, 2014; Bruinsma et al., 2021). The present modules, therefore, extended previous work by Earl and Burbury (2019) who developed an online training intervention that aimed to increase retirement planning behavior in older non-medical workers. They reported training effects including accumulation of health and emotional resources with greater specificity of health goals. Findings of Earl and Burbury's study point to the potential efficacy of online resources to promote late-career transition planning. The current modules focus on planning for financial security and for physical, social and emotional well-being. The modules provided practical strategies for setting goals to achieve these ends and include embedded videos in which medical colleagues described their own experiences in transitioning to retirement or other roles in non-clinical settings where they continue to apply their expertise. Moreover, other embedded videos featured interviews with experts in financial planning and the aged care sector who provided general advice.

The current study aimed to develop an online educational resource for late-career medical practitioners to actively plan for their transition to retirement or an encore career. We hypothesized that, compared to the control group, participants in the training group would demonstrate lower levels of work centrality (Hypothesis 1), higher levels of mastery (Hypothesis 2) and accumulation of tangible (Hypothesis 3a), social (Hypothesis 3b), and psychological (Hypothesis 3c) resources. Additionally, it was expected that following completion of the modules, training group participants would show positive changes to their perception of goals across five specific resource domains: health (Hypothesis 4a), financial (Hypothesis 4b), social (Hypothesis 4c), cognitive (Hypothesis 4d) and emotional (Hypothesis 4e).

2. Material and methods

2.1. Study design

To assess outcome changes over time, the research adopted a pre-

post design using two subgroups; those who completed the modules and those who only completed the surveys. In addition, we adopted a qualitative evaluation of participants' experiences with the training. While it is acknowledged that an experimental method is optimal for training evaluation, our initial approach was to trial the modules and then refine the content as informed by participant feedback and suggestions prior to making the resource freely available to medical practitioners through the study sponsor.

2.2. Participants

Study participants were invited via an embedded link in a newsletter distributed by Avant Mutual, a medical defense organization, to their members. Recruitment criteria were that participants were aged 55 years and over, registered with the Australian Health Practitioner Regulation Authority (AHPRA), and working for 30 h or more per week. Previous research indicated the reticence of doctors to consider retirement and retirement planning more generally (Jenkins, 2016; Wijeratne et al., 2017a). Consequently, we expected that recruitment to the retirement planning study would be problematic. For that reason, we initially invited doctors to complete a survey about retirement intentions (baseline). At baseline there were 262 registered medical practitioners who responded aged between 55 and 77 years ($Mage = 61.9$), 140 (53.4%) male, 195 married (74.5%) and working on average 38.8 h per week. Reported fields of practice included internal medicine (26.0%), obstetrics/gynaecology (13.7%), psychiatry (11.0%), emergency medicine (9.6%), surgery (9.6%), paediatrics (6.8%) and anaesthetics (6.8%), among others (16.5%). Mean intended retirement age was 67.25 ($SD = 4.42$). At the end of the survey we invited ongoing participation and asked participants to indicate their interest in completing four educational retirement planning modules. Of the 262 participants who completed baseline measures, 58 went on to complete the modules. In order to provide a control group for comparison, we invited the remaining 204 baseline participants to complete the post-survey; 23 responses were received, and this formed the control group. In the current study, non-adherence is defined as non-completion of the modules. Limitations in the design are acknowledged, but proof of concept was needed in the first instance to encourage wider participation.

The study received ethics approval from the Human Research Ethics Committee at the University of New South Wales, Australia, and was conducted in compliance with the National Statement on Ethical Conduct in Human Research, 2007 (Updated 2018).

2.3. Training modules

To ensure that the content was relevant and engaging, the online Transition to Retirement program was piloted on a focus group of doctors. The focus group was conducted in person with eight representatives (five males and three females), most of who were management committee members of the New South Wales Doctors Health Advisory Group, a non-regulatory and independent body whose primary purpose is to promote doctors' health and provide personal advice to medical practitioners facing difficulties. The session was facilitated by the second and third author and began with broad questions relating to doctors' difficulties regarding transition to retirement and then more specific questions about proposed module content. During the session, field notes were recorded by a research assistant and these notes were provided to focus group participants after the session for verification. Of the modules prepared, primary concerns were with the management of careers and this determined the order of modules presented.

This approach follows the scientist-practitioner model (Jones and Mehr, 2007), whereby integrating medical practitioner expertise in the design and development of the training was more likely to lead to superior outcomes (Lacerenza et al., 2017). The program was termed "An online educational program to assist retirement planning for late-career

medical practitioners". The modules, designed to prompt planning across career and non-work-related areas, were hosted on a dedicated website entitled "Transition to Retirement" and accessed by password. The modules are now freely available here: <https://resourcesresearch.net/transition-to-retirement.html>

To optimise knowledge transfer and results (Lacerenza et al., 2017), the four training modules were delivered online one week apart (starting in early February 2019) and contained evidence-based information, graphs, case studies, and videos of medical practitioner role models who were transitioning to retirement or already retired, and experts in specific areas of retirement planning. Participants were able to complete each module within one week. Overall, the maximum time lapse between the baseline survey and post-survey was six weeks. Respondents provided informed consent after reading study information.

2.3.1. Module 1

According to the temporal process model of retirement (Shultz and Wang, 2011), individuals progress through the retirement process beginning with a planning phase, followed by a decision-making phase and, finally, the transition from full-time worker to retiree. Module 1 aimed to provide understanding of the retirement transition process and to prompt reflection and planning. Theoretical concepts introduced psychological and behavioral processes that promote good transition and adjustment. Transition options relevant to medical practitioners (e.g., reducing practice hours, considering non-clinical work) were covered to encourage transition phase decisions.

2.3.2. Module 2

Many doctors tend to neglect their own health, particularly their mental health, because they are embarrassed or perceive health concerns as a sign of weakness (Baigent and Baigent, 2018; Beyond Blue, 2013). Thus, the objective of Module 2 was to highlight the importance of accumulating physical, cognitive and mental health resources for successful retirement. Module 2 provided research evidence regarding health benefits and risk factors specific to doctors to encourage participants to reflect on and promote individual health resources.

2.3.3. Module 3

The objective of Module 3 was to increase awareness of the contribution of social and emotional resources to quality of life in retirement. Doctors who prioritize work tend to neglect non-work related social participation and creative pursuits and may face retirement with a low level of tangible, informational, or social and emotional support in retirement (Leung and Earl, 2012; Wijeratne and Earl, 2020). Module 3 prompted participants to reflect on their own social and emotional resources and prompted behaviors such as nurturing existing relationships and building more social support networks.

2.3.4. Module 4

Module 4 covered preparation for retirement in terms of a broad range of issues related to financial planning. It provided advice and suggestions, including links to online resources for topics specific to doctors such as winding up clinical practice and terminating contracts or commercial leases. Module 4 also provided guidance on seeking financial advice and choosing a financial adviser, including questions to consider asking an adviser in order to assess their qualifications and suitability. Additionally, the module contained embedded videos from finance and retirement experts.

2.4. Measures

2.4.1. Retirement intentions

Retirement intention was assessed from responses to a single question, "Do you intend to retire?" scored on a five-point scale with anchors (1) No, I do not intend to retire, (3) Not sure; both retiring and continuing to work appeal to me equally, to (5) Yes, I plan to retire and I

know exactly when that will be. A higher score indicated a stronger intention to retire. An open-ended question was also asked, "If you intend to retire, at what age will this be?"

2.4.2. Retirement resources

The Retirement Resources Inventory (RRI; Leung and Earl, 2012) is a 35-item self-report measure of resources relevant to satisfaction in, and adjustment to, retirement. It consists of three resource types (RT): tangible resources (RT3; physical and financial); social resources (RT2; quality of social interactions and support); and psychological resources (RT1; emotional, cognitive and motivational). Depending on the nature of the question, responses on a Likert-type scale ranged from 1 (*extremely poor/very few/very little*) to 5 (*extremely good/many/plenty of/excess*). Scores were summed; higher scores indicate greater level of resources. Scale reliability was acceptable (Cronbach's $\alpha = 0.78$ to 0.89).

2.4.3. Mastery

Mastery is an internal resource that has been linked to coping with general stressors and has been defined as the degree to which a person has a general sense of control over their life (Pearlin and Schooler, 1978). The 7-item Mastery questionnaire (Pearlin and Schooler, 1978) was used to assess changes in perceived sense of control; for example, "What happens to me in the future mostly depends on me". One of four Likert-type responses was selected for each item from 1 (*strongly disagree*) to 4 (*strongly agree*) with higher scores reflecting a greater sense of mastery. The scale showed good internal reliability (Cronbach's $\alpha = 0.81$).

2.4.4. Work centrality

The importance of work in the lives of doctors was measured using six items from the 12-item Work Centrality Scale (Paullay et al., 1994). Example items include, "I enjoy my job more than my leisure time" and "I am fully devoted to my job". Responses ranged from 1 (*Strongly agree*) to 5 (*Strongly disagree*) and internal consistency was good (Cronbach's $\alpha = 0.85$).

2.4.5. Goal perceptions

Based on a process model of goal expectancy (Hershey and Jacobs-Lawson, 2009) five specific resource-based retirement goals were assessed. These were: Health (being healthy and physically fit), Financial (Being financially stable and independent), Social (Spending time with family members, friends or other retirees), Cognitive (Participating in activities to stay mentally sharp and intellectually engaged), and Emotional (Being happy and emotionally satisfied). Participants rated each goal on a five-point scale in terms of (a) importance (How important is this goal to you?), (b) striving (How much thought and effort have you put into achieving this goal?), (c) expectancy (How likely is it you will achieve this goal?), and (d) outcome consequence (How bad would it be if you were unable to achieve this goal?). Scores were calculated individually for each goal; higher scores indicate greater importance, striving, expectancy and outcome consequence for that particular goal.

2.5. Preliminary analysis

Previous research suggests that voluntary participation in psychological research can lead to self-selection bias (Bethlehem, 2010), even in large population studies (Sogaard et al., 2004). As such, to assess possible self-selection bias, baseline data ($N = 262$) was used to compare the survey only group ($n = 204$) with the training group ($n = 58$) on demographic characteristics, retirement intentions, retirement resources, mastery, work centrality and goals. For continuous variables, t -tests were employed, while chi-square tests were used for categorical variables. Statistical significance was determined for p values $< .05$. Two differences emerged. Health importance was lower for the training group ($M = 4.26$, $SD = 0.72$) compared to the survey-only group ($M = 4.46$, $SD = 0.64$), $t(260) = 2.02$, $p = .044$, Cohen's $d = 0.31$.

Similarly, cognitive striving was lower for the training group ($M = 3.29$, $SD = 0.96$) compared to the survey-only group ($M = 3.63$, $SD = 0.96$), $t(260) = 2.38$, $p = .018$, Cohen's $d = 0.35$. As such, these variables were controlled in the appropriate analyses. Module evaluation was conducted using a qualitative coding method (Bachiochi and Weiner, 2004) and interrater reliability was assessed using 'percent agreement' (McHugh, 2012). All analyses were conducted using SPSS version 25.

3. Results

Generalized Linear Models (GLMs) were used to ascertain between- and within-group differences in outcome variables, while controlling for baseline scores on outcome variables and self-selection biases (health importance and cognitive striving). Linear scales were specified using normal distribution and link function. The final sample, as Fig. 1 shows, consisted of 81 participants represented by two groups; those who completed the training modules ($n = 58$) and those who did not ($n = 23$).

Table 1 presents descriptive statistics representing paired comparisons of baseline and post-training outcome variables separately for training and control groups. There were four significant changes in scores at Time 2 for the training group, but no changes for the control group. As expected, work centrality (H1), $t(57) = 1.99$, $p = .036$, and health expectancy (H4a) increased, $t(57) = -2.02$, $p = .049$. Surprisingly, however, social outcome consequence (H4c), $t(57) = 2.35$, $p = .022$ and emotional outcome consequence (H4e) decreased $t(57) = 3.18$, $p = .002$. Although not significant, as Table 1 shows, it is worth noting the increase in Time 2 mean scores for the training group across mastery (H2), resources (H3a-c), health (H4a) and financial

(H4b) goals (with the exception of health outcome consequence).

Results of the GLM models are shown in Table 2. Two variables emerged as significant outcomes of the training, namely mastery and perception of emotional goal outcome consequence. Compared to the control group ($M = 21.43$, $SD = 0.37$, 95% CI [20.71, 22.15]), the training group showed an increase in estimated marginal mean (EMM) scores in mastery ($M = 22.30$, $SD = 0.25$, 95% CI [21.82, 22.78]), a difference of 0.87, $p = .045$. Conversely, emotional goal outcome consequence was lower for the training group, ($M = 3.18$, $SD = 0.07$, 95% CI [3.03, 3.32]) compared to control group ($M = 3.55$, $SD = 0.17$, 95% CI [3.22, 3.88]), a difference of 0.37, $p = .043$. Although work centrality EMMs were lower, and higher scores were evident for resources, health and financial goals, these did not reach statistical significance.

3.1. Module evaluation

Participants completing each module were asked to rate them, using a 5-star rating scale, in terms of how interesting and informative they were. The overall rating was 3.91 with the Social module attracting the highest rating (4.10), followed by Transition (3.93), Finance (3.83) and Health (3.79). Participants were also invited to provide written feedback. As per Bachiochi and Weiner (2004), and utilized by Earl and Burbury, (2019), a qualitative content analysis was undertaken of the 61 written comments across all four modules. Given the small sample size and number of brief comments a manual review of comments was conducted by the first and third author to identify themes from the data separately and then these themes were compared. Three themes were

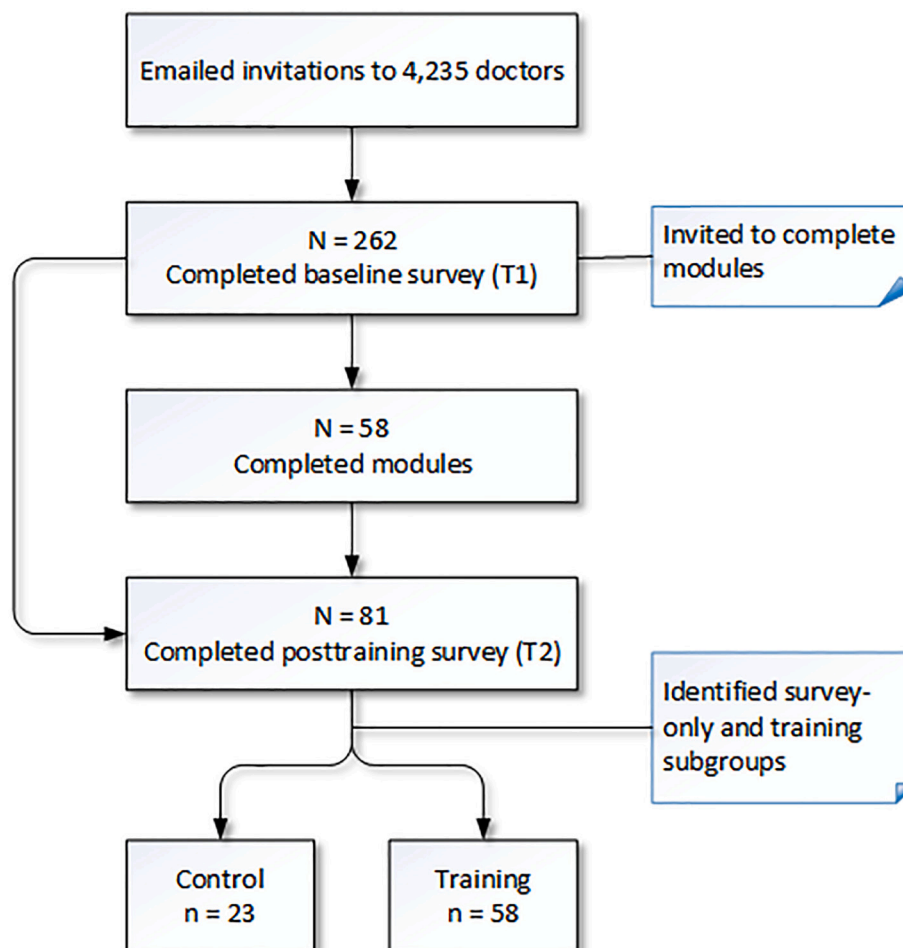


Fig. 1. Participant flow chart.

Table 1
Results of paired-samples *t*-tests showing mean and standard deviation (SD) scores at pretraining and posttraining by condition.

	Training (n = 58)			Control (n = 23)		
	Time 1	Time 2	<i>p</i>	Time 1	Time 2	<i>p</i>
Mastery	22.05 (2.78)	22.31 (2.85)	0.334	21.91 (3.53)	21.39 (4.05)	0.130
Work centrality	22.40 (2.88)	21.88 (3.72)*	0.036	21.59 (4.93)	22.50 (4.11)	0.439
Resources						
RT3 (tangible)	31.26 (4.18)	31.40 (4.33)	0.687	30.52 (3.68)	30.35 (4.64)	0.764
RT2 (social)	28.31 (6.36)	29.16 (6.98)	0.131	26.13 (6.32)	25.91 (6.89)	0.714
RT1 (psychological)	70.36 (6.48)	70.41 (5.87)	0.903	70.48 (5.66)	69.61 (7.22)	0.175
Health goals						
Importance	4.26 (0.72)	4.29 (0.70)	0.659	4.39 (0.72)	4.26 (0.69)	0.418
Striving	3.62 (0.95)	3.69 (0.80)	0.484	3.57 (0.95)	3.57 (0.95)	0.990
Expectancy	3.59 (0.73)	3.74 (0.76)	0.049	3.39 (0.84)	3.65 (0.65)	0.186
Outcome consequence	3.10 (0.93)	3.02 (0.81)	0.403	3.00 (0.85)	2.87 (0.82)	0.503
Financial goals						
Importance	4.26 (0.61)	4.29 (0.59)	0.626	4.43 (0.79)	4.22 (0.90)	0.396
Striving	3.95 (0.83)	4.02 (0.89)	0.325	3.91 (1.04)	3.83 (0.89)	0.411
Expectancy	4.07 (0.75)	4.09 (0.66)	0.711	3.78 (0.95)	3.87 (0.76)	0.503
Outcome consequence	3.48 (0.86)	3.53 (0.96)	0.204	3.35 (1.07)	3.30 (1.02)	0.863
Social goals						
Importance	3.88 (0.80)	3.72 (0.77)	0.072	3.96 (0.77)	3.57 (0.95)	0.059
Striving	3.12 (0.94)	3.03 (0.94)	0.416	3.22 (0.95)	3.17 (0.94)	0.814
Expectancy	3.38 (0.83)	3.52 (0.86)	0.132	3.52 (0.95)	3.30 (1.02)	0.365
Outcome consequence	3.21 (1.06)	2.93 (1.02)*	0.022	3.26 (1.01)	3.09 (0.85)	0.445
Cognitive goals						
Importance	4.19 (0.66)	4.21 (0.72)	0.849	4.48 (0.51)	4.39 (0.58)	0.426
Striving	3.29 (0.96)	3.47 (0.92)	0.221	3.65 (0.83)	3.48 (0.85)	0.295
Expectancy	3.67 (0.66)	3.67 (0.58)	0.995	3.87 (0.55)	3.70 (0.64)	0.162
Outcome consequence	3.48 (0.90)	3.38 (1.01)	0.419	3.61 (1.03)	3.57 (0.99)	0.852
Emotional goals						
Importance	4.16 (0.62)	4.09 (0.63)	0.322	4.26 (0.54)	4.17 (0.49)	0.426
Striving	3.36 (1.02)	3.45 (0.75)	0.552	3.43 (0.79)	3.39 (0.84)	0.788
Expectancy	3.53 (0.75)	3.45 (0.73)	0.322	3.43 (0.90)	3.48 (0.90)	0.714
Outcome consequence	3.48 (0.94)	3.19 (0.76)	0.002	3.48 (0.95)	3.52 (0.79)	0.862

Note. RT = resource type.

agreed upon: informative, general comments, and suggestions for improvement. The comments were independently reallocated back to the agreed themes to provide inter-rater reliability, of which 79% were in agreement, indicating strong reliability. Given that the purpose of module evaluation was to identify potential future improvements to the content rather than used as a measure of training effectiveness, a ‘percent agreement’ was adopted (McHugh, 2012). The feedback comments could be categorized as primarily positive and some negative: (1) *informative* (e.g., “Very useful advice on closing up of practice and future retirement management”, “I went and booked an appointment with my GP while watching this! (Health module)” and “...food for thought re [garding] using your strengths”); (2) *general comments* (e.g., “Helpful to...hear from doctors who’ve retired”, and “Easy to navigate”); (3) *suggestions for improvement* (e.g., “Might be better to have [links to] tangential websites at the end instead of breaking off the train of thought” and “Would like to see more case studies from GP members with less standing in the profession” ...“a bit repetitive towards the end”).

4. Discussion

The primary objective of the current study was to develop and evaluate an online program for late-career medical practitioners working in Australia to promote planning for a transition to retirement. In addition, the study sought to inform improvements to the modules before providing free general access for medical professionals. The main anticipated training outcomes included a decrease in work centrality and increases across mastery, resource accumulation, and perceptions (importance, striving, expectancy and outcome consequence) relating to five resource-based goal dimensions (health, financial, social, cognitive and emotional goals). Controlling for baseline scores and self-selection biases, as anticipated, results indicated that the training group experienced an increased level of mastery at post-training. Contrary to

expectation, however, the training group showed a lower level of perceived outcome consequence for emotional goals. No significant changes were observed for the control group.

Given the importance of mastery as an individual resource in later life, particularly in retirement (Donaldson et al., 2010), this result provides early indication for the effectiveness of the modules to promote a greater sense of control for one’s later life trajectory. Quantitative and qualitative research (Sherwood and Bismark, 2020; Skowronski and Peisah, 2012; Wijeratne et al., 2017b) confirms that many doctors work well into their late 60s and 70s, a trend often associated with work centrality (Parboteeah and Cullen, 2003) and the culture of medical practice. An increased sense of mastery indicates a greater sense of personal control about important and meaningful matters to the individual, rather than feeling constrained to follow the expectations of others.

The post-training perception of lower outcome consequence for emotional goals was surprising. This finding may be an indication of how the goals are prioritized, with participants concluding that emotional resources are harder to change than physical, financial and social resources. This might also be an early indication of “letting go” – recognizing the sentimental attitude to owning the title of Doctor.

With regards to pre-post comparisons, as anticipated, lower work centrality scores at posttraining indicate a training effect whereby participants reflected on other life areas outside of medicine. Also as predicted, higher levels of expectancy in achieving health goals appear to be due to Health module messages pertaining to the imperative for self-care and planning around health promotion. Although doctors provide health care for patients, they are known to often neglect their own health in the process often leading to burnout (Baigent and Baigent, 2018). The Health module acts as a reminder for doctors to occasionally turn the focus on their own health.

The two unexpected findings at posttraining were lower level perceptions about the negative consequences of not achieving social or

Table 2
Unstandardized coefficients for GLM models representing changes to outcome variables at posttraining for the training group compared to control group.

	β	SE	95% CI	
			LL	UL
Mastery	0.87*	0.44	-0.01	1.74
Work centrality	-0.99	0.73	-0.45	2.42
Resources				
RT3 (tangible)	0.32	0.66	-0.98	1.62
RT2 (social)	1.16	0.81	-0.43	2.74
RT1 (psychological)	0.80	0.77	-0.70	2.30
Health goals				
Importance	0.11	0.15	-0.19	0.40
Striving	0.13	0.19	-0.25	0.50
Expectancy	0.10	0.17	-0.23	0.42
Outcome consequence	0.13	0.19	-0.23	0.50
Financial goals				
Importance	0.17	0.12	-0.07	0.40
Striving	0.19	0.20	-0.21	0.59
Expectancy	0.05	0.14	-0.23	0.32
Outcome consequence	0.15	0.24	-0.32	0.62
Social goals				
Importance	0.21	0.19	-0.17	0.58
Striving	-0.09	0.18	-0.43	0.25
Expectancy	0.30	0.21	-0.11	0.71
Outcome consequence	-0.11	0.20	-0.49	0.28
Cognitive goals				
Importance	-0.13	0.13	-0.26	0.24
Striving	0.16	0.18	-0.20	0.51
Expectancy	0.07	0.12	-0.17	0.31
Outcome consequence	-0.20	0.21	-0.60	0.21
Emotional goals				
Importance	-0.06	0.11	-0.27	0.16
Striving	0.04	0.17	-0.30	0.38
Expectancy	-0.09	0.13	-0.34	0.16
Outcome consequence	-0.37*	0.18	-0.73	-0.01

Note. RT = resource type.

* $p < .05$.

emotional goals. Although unexpected, these findings are not so surprising. Regarding social goals, it may be that due to the social aspects of doctors' work involving constant patient interactions, doctors may enjoy solitary time and therefore the consequences of not meeting social goals are not perceived as a negative outcome. With respect to lower perception of negative consequences of meeting emotional goals, this may be a demonstration of good emotion regulation skills and confidence in possessing adequate emotional resources to manage emotional goals.

Regarding evaluation of the training modules, participant ratings and comments indicated that the modules were well-received and relevant to late-career doctors. Qualitative feedback guided many of the improvements that were subsequently made to the module content (e.g., font size, visibility of certain buttons, appearance of presenters). Obtaining feedback from participants allowed assessment of the relevance and usefulness of the information, specifically to medical practitioners. For example, while the Health module was designed to serve as a reminder for doctors to look after their own physical and mental health, the module received the lowest rating (3.79/5) and comments suggest that this may have been a reflection of participants' knowledge of the topic rather than the actual quality of the content. Module feedback informed appropriate adjustments to the content prior to making the modules available to other practitioners at <https://resourcesresearch.net/transition-to-retirement.html>. In doing so, we raise awareness about the importance of transition planning and advance the 'transition to retirement' conversation more widely among medical professionals beyond the current sample.

It is important to recognize a number of limitations in this study. Notably, the tools utilized to measure changes in work centrality, resource levels and goal attainment monitor larger macro behaviors and as such may require a longitudinal investigation to adequately assess all

intended intervention outcomes. As behavior is complex and nuanced, future studies could create and adopt more sensitive approaches to measure learner behavior and may include physiological measures in addition to self-report data. Nevertheless, we provided early evidence of the potential for online interventions to generate reflection among medical practitioners about actively planning for an encore career or retirement.

We note the low response rate of only 6.2% (262/4235) to the invitation to participate in the study and the subsequent low completion rate of training, for which there may be a number of explanations. The study invitations were sent by a medical defense organization which regularly engages its membership with education and advocacy campaigns, so the invitation to the current study may have competed with other demands on doctors' time. Those who responded to the baseline survey worked almost full-time on average, perhaps suggesting they were not at the planning stage of retirement and not yet ready to engage in a study such as this. Finally, it may well be that the culture of medicine, which does not promote the discussion of transitioning to retirement, simply confounded the poor response.

There are several ways in which future research may enhance our goal of educating medical practitioners on optimizing their transition to retirement. It may be that an individualized approach, such as professional coaching, is required before practitioners are ready to take their first steps towards retirement. Specifically, future educational programs may need to focus on specific sub-groups. For instance, age related groups such as 'young-old' vs 'old-old', gender, medical specialty and international medical graduates.

5. Conclusion

The current study provided a preliminary examination of an online resource to prepare older doctors for the transition from medicine to retirement or another non-practicing role within an encore career. The planning program is a response to calls for interventions to assist older doctors with retirement preparation, transition and adjustment. Our findings, including qualitative feedback, demonstrate that the training raised awareness about the importance of planning for the transition from medical practice to retirement rather than working until ill-health, poor quality practice or other unforeseen situations force retirement.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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