**STUDENT MIDWIVES' INTENTION TO DELIVER WEIGHT MANAGEMENT
INTERVENTIONS: A THEORY OF PLANNED BEHAVIOUR & SELF-
DETERMINATION THEORY APPROACH**

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Abstract

Objectives: Overweight and obesity during pregnancy is a risk to the health of mother and child. Midwives can modify this key risk factor by providing weight management interventions to women before and during pregnancy. This study investigated social cognitive determinants of pre-clinical student midwives' intention to provide weight management intervention in preconception and antenatal clinical contexts. Social cognitive determinants from the Theory of Planned Behaviour (attitudes, subjective norms, perceived behavioural control) and Self-Determination Theory (autonomous motivation) were used to predict pre-clinical students' intentions once they enter practice.

Method: The sample was 183 female pre-clinical student midwives from 17 Australian universities (age range = 18-54 years). Participants received a cross-sectional questionnaire that measured demographic items, attitudes, subjective norms, perceived behavioural control and autonomous motivation towards providing weight management intervention at two different stages of pregnancy – preconception and antenatal.

Results: Attitudes, subjective norms, and perceived behavioural control accounted for 56% of intention to provide weight management interventions to women planning pregnancy; however, the addition of autonomous motivation was non-significant. In contrast, attitudes and subjective norms (but not perceived behavioural control) accounted for 39% of intention to provide weight management interventions to women during pregnancy. Furthermore, the addition of autonomous motivation to the model was significant and accounted for an additional 3.1% of variance being explained.

Implications and Conclusions: Curriculum changes that support and increase pre-clinical student midwives' intention should focus on these specific correlates of intention in order to foster long term changes in clinical practice. Changes to the education and training of midwives should be carefully considered to understand their impact on these important determinants of intention to engage in this critical clinical skill.

Introduction

In Australia, 44% of women enter pregnancy overweight or obese (Australian Institute of Health and Welfare, 2017), and 38% of pregnant women gain excessive weight during pregnancy (de Jersey, Nicholson, Callaway, & Daniels, 2012). The most recent Australian data on obstetric obesity also indicated that 66% of women from one Victorian maternity service were overweight or obese (Cunningham & Teale, 2013). These rates are problematic given excessive gestational weight gain and gestational overweight and obesity are independent predictors of postpartum weight retention (Chin et al., 2010), gestational diabetes (Nelson, Matthews, & Poston, 2010), pregnancy complications (Goldstein et al., 2017; McIntyre, Gibbons, Flenady, & Callaway, 2012), and an increased risk of negative child health outcomes (Ehr & Versen-Hoynck, 2016). As such, providing women with support and adequate intervention to help them manage their weight before and during pregnancy is an important component of preconception and antenatal care, for both the woman and their child (Hill, McPhie, Fuller-Tyszkiewicz, Gillman, & Skouteris, 2016; Hill et al., 2017).

One possible intervention to minimise excessive gestational weight gain is for relevant health professionals, such as midwives, to provide advice and appropriate goal-setting for weight management to women preconception, during pregnancy, and in the postpartum. Previous research has shown that whether or not women receive such counselling from health professionals is a predictor for developing weight management goals during pregnancy that are consistent with weight gain guidelines (Tovar et al., 2011). Importantly, not having a weight management goal in pregnancy is predictive of excessive gestational weight gain (Cogswell, Scanlon, Fein, & Schieve, 1999). Midwife-led interventions have been shown to be effective in reducing maternal obesity and excessive gestational weight gain when delivered to women who are planning a pregnancy (Beckmann,

Widmer, & Bolton, 2014), and to women who are currently pregnant (McGiveron et al., 2015). However, research shows that only half of women report that they had received weight management advice before or during pregnancy (Stengel, Kraschnewski, Hwang, Kjerulff, & Chuang, 2012; Whitaker, Wilcox, Liu, Blair, & Pate, 2016), and many midwives report reluctance to provide weight management interventions to women (Heslehurst et al., 2013; Wahedi, 2016).

Qualitative evidence suggests that while some of this reluctance may be related to a lack of knowledge, beliefs that midwives hold about the acceptability of providing weight management interventions and the sensitivity of discussing weight management with overweight and obese women, might also contribute to midwives not providing such interventions to pregnant women (Johnson et al., 2013). This is consistent with quantitative studies that have shown that health professionals' provision of weight management care within non-pregnant populations with a range of demographic and psychosocial characteristics (e.g. gender, previous training, self-efficacy, attitudes) is not simply a function of their knowledge of the risks associated with maternal obesity and/or weight management guidelines (Zhu, Norman, & While, 2013). Some researchers and clinicians have suggested a need for relevant training within the entry-to-practice midwifery curriculum in order to address these barriers (e.g. Heslehurst et al., 2013; Power, Cogswell, & Schulkin, 2006).

Given previous research suggests that factors other than knowledge are important in understanding health professionals' clinical behaviour (Godin, Bélanger-Gravel, Eccles, & Grimshaw, 2008; Zhu et al., 2013), it is unlikely that simply increasing health professionals' knowledge of the risks of maternal overweight and obesity would be sufficient to bring about change in practice. Instead, implementing curriculum changes to increase provision of weight management interventions requires an understanding of underlying psychosocial factors that impact on this behaviour. This is consistent with past work that has emphasised the need to

understand the psychosocial determinants of clinician behaviour in order to improve uptake and performance of evidence-based practice (Michie et al., 2005). In particular, it would be valuable to focus on changes to the curriculum that are effective at increasing pre-clinical student midwives' intention to provide weight management interventions once they enter practice (Michie et al., 2005; Stewart, Wallace, & Allan, 2012). Previous research has indicated that intention to perform clinical behaviours accounts for up to 40% of the variance in health professionals' future performance of relevant clinical behaviours (Godin et al., 2008; Steinmetz, Knappstein, Ajzen, Schmidt, & Kabst, 2016). In the case of midwives, the beliefs they hold towards provision of weight management interventions to patients during their pre-clinical training are likely to contribute to their willingness to actually provide such interventions to preconception and antenatal women once they enter practice. Pre-clinical training is an important phase of intention development since it is when professional opinions and expectations are in their formative stages. Given evidence that it is easier to introduce new beliefs than change beliefs once they have been consolidated (Fabrigar, MacDonald, & Wegener, 2005), it may be easier to intervene in this period than once midwives are already practicing and their beliefs are potentially less malleable. As such, the current study investigated potential social cognitive predictors of pre-clinical student midwives' intentions to provide weight management interventions to women once they enter clinical practice.

Conceptual framework: Theory of Planned Behaviour and Self-Determination Theory

Given the focus of this body of work was on understanding social cognitive predictors of intention, the current study adopted an approach to investigating pre-clinical student midwives' intention to provide weight management intervention that is based on the theory of planned behaviour (Ajzen, 1991) and self-determination theory (Deci & Ryan, 1985). Since both of these theories suggest that predictors of intention are context and population specific (Fishbein & Ajzen, 2010; Hagger & Chatzisarantis, 2009), this study

investigated pre-clinical student midwives' intention to provide weight management interventions in two different clinical settings, in which midwife led weight management interventions have previously been implemented: (1) provision of *preconception* weight management interventions; and (2) provision of *antenatal* weight management interventions.

According to the theory of planned behaviour, intention to engage in a behaviour (in this case provision of weight management intervention) is influenced jointly by pre-clinical student midwives' attitude towards providing such interventions (attitude), perceived social pressure to provide interventions (subjective norm), and the extent to which they feel intervention delivery is within their control (perceived behavioural control). In comparison, self-determination theory argues that intention to provide weight management interventions depends on the extent to which provision of weight management interventions would reflect personal goals and values rather than external pressure (autonomous motivation). For both theories, the social cognitive determinants of intention are context specific, such that beliefs about providing weight management intervention to women planning pregnancy would be expected to predict intention to provide interventions in preconception contexts, while beliefs about providing weight management interventions to women who are currently pregnant would predict intention to provide antenatal interventions.

Previous research has indicated that the theory of planned behaviour components (attitude, subjective norm and perceived behavioural control) account for 59% of the variance of health professionals' intention to engage in clinical behaviours (Godin et al., 2008). Importantly, studies employing the theory of planned behaviour to predict health professionals' behaviours account for significantly more variance in behaviour than studies using other theoretical approaches (Godin et al., 2008).

Research indicates that constructs beyond those included in the theory of planned behaviour may also influence intention (see: Godin et al., 2008). The current study added a

component from self-determination theory (autonomous motivation) since it has been suggested that it is an important independent predictor of intention. Self-determination theorists have argued that self-determination theory should be applied to the education of health professionals, and that use of the theory “may also help educators to address such problems as the current gap between current medical practice and what are known to be effective counselling and pharmacological treatments... The application of self-determination principles in education may narrow this treatment gap by promoting physicians reliable use of effective treatments...” (Williams & Deci, 1996, p. 992). While research applying self-determination theory to health professionals’ engagement in clinical behaviours are limited, autonomous motivation has been shown to be related to health professionals’ provision of tobacco dependence counselling (Williams, Levesque, Zeldman, Wright, & Deci, 2003) and the use of a patient centred style in simulated clinical interviews (Williams & Deci, 1996). The theory of planned behaviour and self-determination theory have previously been integrated in studies where their constructs are hypothesised to enhance health and educational interventions (Hagger & Chatzisarantis, 2009). The combination of these theories is valuable since it appears that self-determination theory may account for unique variance in intention beyond that accounted for by the theory of planned behaviour alone (Hagger & Chatzisarantis, 2009).

The present study

Given the literature outlined above, the aim of this study was to investigate social cognitive determinants of pre-clinical student midwives’ intentions to provide weight management interventions once they enter clinical practice. Specifically, we investigated the role of theory of planned behaviour (attitude, subjective norm, and perceived behavioural control) and self-determination theory (autonomous motivation) constructs in predicting

intention to provide weight management interventions in preconception and antenatal clinical settings. It was hypothesised that:

- (1) attitude, subjective norm, and perceived behavioural control would predict intention to provide weight management intervention in both preconception and antenatal clinical contexts;
- (2) autonomous motivation would predict intention over and above the influence of attitude, subjective norm, and perceived behavioural control in both preconception and antenatal clinical contexts.

The relative weight of these four predictors was tested separately for each clinical context (i.e., two separate multiple hierarchical regression models were tested). The theoretical model for preconception and antenatal clinical contexts is presented in Figure 1.

Methods

Participants

Midwifery students enrolled at Australian universities were recruited between August 2016 and July 2017. An advertisement explaining the research and offering a prize-draw voucher as incentive (grocery voucher) was disseminated to university course coordinators by email; to administrators of closed and public midwifery/university groups and pages through Facebook; via health communities on Twitter; and by word of mouth. *A priori* power analyses led to a minimum target sample size of 160 students in order to appropriately test all hypotheses.

Design and ethical considerations

Participants in the study completed a single online survey. Student midwives who were interested in participating in the study accessed the online plain language statement, consent form, and study questionnaire via the URL provided in recruitment materials for the study. At the conclusion of the study participants were given the option to enter a prize draw.

Participants who chose to enter the draw were directed to a second survey where they could enter their contact details, these details were stored in a separate survey to ensure that participant responses could not be linked to individual participants. Participation in the study was voluntary. University course coordinators, teaching staff who advertised the study to their students, and other individuals who assisted in disseminating information about the study did not have access to any study data or the identity of participants.

Ethics approval was obtained from the Human Ethics Advisory Group, Faculty of Health, Deakin University (HEAG-H 113_2016).

Measures

Participants first provided demographic information (age group, gender, ethnicity, university, course, level of study). The following measures were then completed by participants for both the preconception and antenatal context. Higher scores on all measures indicated an overall more positive valence of attitude, subjective norm, perceived behavioural control, autonomous motivation, and intention; lower scores indicated a negative valence of attitude.

The Theory of Planned Behaviour. Adapted from Ajzen (1985, 2006) and Francis et al. (2004) to address the weight management perceptions of pre-clinical midwifery students. Measures were adapted from manualised surveys using standard methods to ensure that question stems were relevant to the behaviour under investigation.

Intention: Assessed as the mean score of 3-items (for both preconception and antenatal stages), rated on a 7-point scale from *strongly disagree* (scored +1) to *strongly agree* (scored +7). Included items such as: ‘I expect to deliver weight management interventions to women planning a pregnancy’ and ‘I intend to deliver weight management interventions to women during pregnancy.’

Attitude: Assessed as the mean score of an 11-item, 7-point semantic differential scale (for both preconception and antenatal stages). Included such items as ‘For me to deliver weight management interventions to women planning a pregnancy is: *important* (scored +1) to *unimportant* (scored +7)’. All items were reverse coded.

Subjective norms: Assessed as the mean score of a 9-item, 7-point scale divided into three subscales (three items in each), to assess subjective norms in relation to colleagues, supervisors and patients (for both preconception and antenatal stages). Items included: ‘I feel under pressure by my colleagues to deliver weight management interventions to women planning a pregnancy’; *strongly disagree* (scored +1) to *strongly agree* (scored +7). Three items were reverse coded.

Perceived behavioural control: Assessed as the mean score of a 5-item, 7-point scale (for both preconception and antenatal stages) rated from *strongly disagree* (scored +1) to *strongly agree* (scored +7). Items included: ‘The decision to deliver weight management interventions to women planning a pregnancy is beyond my control.’ One item was reverse coded.

Social Determination Theory.

Autonomous motivation: Adapted from (Ryan & Connell, 1989) to reflect reasons for delivering weight management interventions. Assessed as the mean score of a 3-item, 7-point scale from *strongly agree* (scored +1) to *strongly disagree* (scored +7) (for both preconception and antenatal stages). Items included: ‘A reason to deliver weight management

interventions to women during pregnancy is that I am interested in this area of care and enjoy helping my patients in this way.' All items were reverse coded.

Data Analysis

Scale scores were calculated according to the scoring procedures described for each measure. A series of t-tests were then conducted to assess whether there were any statistically significant differences between participants' beliefs towards preconception and antenatal weight management interventions for each of the key variables. The relationships between these constructs was further explored using bivariate correlations.

Hypothesis 1 and 2 were tested for each context. In each, pre-clinical student midwives' intentions were examined using a two-step hierarchical multiple regression analysis. Theory of planned behaviour constructs (attitude, subjective norm, perceived behavioural control) were entered at Step 1 (Hypothesis 1) and the self-determination theory construct of autonomous motivation was entered at Step 2 (Hypothesis 2).

Results

The sample consisted of 183 pre-clinical student midwives from 17 Australian universities. All participants were female; 43% were aged 18-24 years; and a majority (90%) were undertaking an undergraduate qualification and had no prior clinical or allied health experience or qualification (74%). Other demographic characteristics of the sample are displayed in Table 1.

Beliefs about Providing Weight Management Interventions.

As shown in Table 2, pre-clinical student midwives generally appeared to hold positive beliefs about providing weight management interventions both during the preconception and antenatal stage. However, intention, subjective norm, perceived behavioural control, and autonomous motivation were all significantly more positive with regards to the provision of antenatal weight management interventions than the provision of

Table 1

Demographic Characteristics of the Sample.

	Response	Frequency	%
Age	18-24	79	43.2
	25-34	61	33.3
	35-44	35	19.1
	45-54	8	4.4
Degree type	Undergraduate	164	89.6
	Postgraduate	18	9.8
Degree progress	1st year	43	23.5
	2nd year	66	36.1
	3rd year	50	27.3
	4th year	23	12.6
	5th year	1	0.5
Prior qualification	No	135	73.8
	Yes	46	25.1

Table 2

Mean Differences in Pre-clinical Student Midwives' Beliefs about Providing Weight Management Interventions in Preconception and Antenatal Clinical Contexts

	<i>Preconception</i>			<i>Antenatal</i>			<i>p</i>
	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	
Intention	101	5.09	1.14	101	5.36	1.23	.040
Attitude	99	5.51	0.95	99	5.60	1.05	.187
Subjective Norm	100	3.96	0.94	100	4.28	0.80	<.001
Perceived behavioural control	100	4.28	0.80	98	4.48	1.08	<.001
Autonomous Motivation	101	5.82	0.99	101	6.00	0.95	.002

Note. N = *sample size*, SD = *standard deviation*, all items scored on a 1-7 scale

preconception weight management interventions (p 's < .05). There were no differences in pre-clinical student midwives' attitudes between the preconception and antenatal clinical setting ($p=.187$). Most social cognitive determinants were correlated across both preconception and antenatal clinical contexts (see Table 3).

Predicting pre-clinical student midwives' intention to provide preconception weight management interventions

As shown in Table 4, at Step 1 the theory of planned behaviour constructs accounted for 56% of the variance in intention to provide preconception weight management interventions. All variables were significant predictors of intention. Preconception attitude was the strongest predictor and subjective norm was the weakest predictor of intention to provide preconception weight management interventions. Attitudes, subjective norm, and perceived behavioural control towards preconception weight management interventions were associated with intention to provide such interventions. At Step 2, the addition of the autonomous motivation accounted for an additional 2.4% of variance in intention, however, this was not a significant increase in variance accounted for ($R^2\Delta = .008$; $F\Delta_{1,108} = 2.05$, $p = .155$), and all theory of planned behaviour predictors remained significant in the final model.

Predicting pre-clinical student midwives' intention to provide antenatal weight management interventions.

As shown in Table 5, overall, the theory of planned behaviour accounted for 39% of the variance in pre-clinical student midwives' intention to provide antenatal weight management interventions. Attitude and subjective norm were significant predictors of intention. More positive attitudes and subjective norm regarding the provision of antenatal weight management interventions were associated with a stronger intention to provide such interventions. However, perceived behavioural control was not a predictor of intention in the

Table 3

Bivariate Pearson's Correlations between Social Cognitive Determinants

	1	2	3	4	5	6	7	8	9	10
1. Intention - Preconception	1	.661**	.282**	.433**	.584**	.406**	.495**	.302**	.387**	.473**
2. Attitude - Preconception		1	.109	.215*	.737**	.450**	.800**	.176	.315**	.671**
3. Subjective Norm - Preconception			1	.326**	.138	.214*	.053	.664**	.137	.031
4. Perceived behavioural control - Preconception				1	.243**	.223*	.202*	.273**	.700**	.169
5. Autonomous Motivation - Preconception					1	.535**	.712**	.180	.299**	.827**
6. Intention - Antenatal						1	.587**	.339**	.350**	.569**
7. Attitude - Antenatal							1	.183	.416**	.759**
8. Subjective Norm - Antenatal								1	.256*	.151
9. Perceived behavioural control - Antenatal									1	.352**
10. Autonomous Motivation - Antenatal										1

Note. * $p < .05$ (two-tailed); ** $p < .01$ (two tailed).

Table 4

Hierarchical Multiple Regression Model Predicting Intention to Provide Preconception Weight Management Interventions

Variable		β	t	p	ΔR^2
Step 1					.559
	Attitude - Preconception	.604	9.295	.000	
	Subjective Norm - Preconception	.145	2.135	.035	
	Perceived behavioural control - Preconception	.260	3.761	.000	
Step 2					.008
	Attitude - Preconception	.506	5.361	.000	
	Subjective Norm - Preconception	.135	1.988	.049	
	Perceived behavioural control – Preconception	.254	3.680	.000	
	Autonomous Motivation - Preconception	.136	1.431	.155	

Table 5

Hierarchical Multiple Regression Model Predicting Intention to Provide Antenatal Weight Management Interventions

	Variable	β	t	p	ΔR^2
Step 1	Attitude - Antenatal	.507	5.730	.000	.394
	Subjective Norm - Antenatal	.216	2.596	.011	
	Perceived behavioural control - Antenatal	.088	.975	.332	
Step 2	Attitude - Antenatal	.309	2.488	.015	.031
	Subjective Norm - Antenatal	.216	2.645	.010	
	Perceived behavioural control - Antenatal	.075	.849	.398	
	Autonomous Motivation - Antenatal	.269	2.231	.028	

Note. β = standardised regression coefficient; t = t-statistic; p = probability value; ΔR^2 = change in explained variance.

antenatal context. The addition of autonomous motivation at Step 2 accounted for an additional 3.1% of variance in intention. This was a significant increase in variance accounted for ($R^2\Delta = .031$; $F\Delta_{1,93} = 4.98$, $p = .028$). In the final model, attitude, subjective norm and autonomous motivation were all significant predictors of intention to provide antenatal weight management interventions.

Discussion

The aim of this study was to investigate social cognitive determinants of pre-clinical student midwives' intentions to provide weight management interventions once they enter practice. Specifically, we investigated the role of theory of planned behaviour (attitude, subjective norm, and perceived behavioural control) and self-determination theory (autonomous motivation) constructs in predicting pre-clinical student midwives' intention to provide weight management interventions in preconception and antenatal clinical settings.

Consistent with expectations (Hypotheses 1 and 2), social cognitive determinants from the theory of planned behaviour and self-determination theory accounted for a large portion of the variance in intention to provide care in both preconception and antenatal settings. The model accounted for 56% of the variance in preconception intention, and 42.4% of the variance in antenatal intention. These results are consistent with findings of a meta-analysis which demonstrated that constructs of the theory of planned behaviour account for a substantial proportion of the variance in health professionals' intention to engage in clinical behaviours (Godin et al., 2008).

Pre-clinical midwifery students expressed stronger intentions and more supportive subjective norms, perceived behavioural control, and autonomous motivation in the antenatal clinical context than in the preconception context. This is consistent with the clinical contexts in which midwives are most likely to engage with patients, since engagement in preconception care by midwives is relatively uncommon. However, it is important to note

that beliefs about providing preconception weight management interventions were generally positive. This suggests that pre-clinical student midwives do appreciate the value of such care in the preconception period and may be willing to provide weight management interventions if working with clients in a setting that would allow them to do so. This is consistent with studies that have surveyed *practising* midwives and found that attitudes towards providing preconception care are generally positive (e.g. Lavender, Bennett, Blundell, & Malpass, 2002; van Heesch, de Weerd, Kotey, & Steegers, 2006).

Researchers have suggested that the theory of planned behaviour might be a suitable basis for theory based interventions to increase midwives intentions to provide gestational weight management interventions (Hazeldine, Rees, Handy, & Stenhouse, 2015) and have sought to apply them in the context of midwifery education (Hart et al., 2018). However, no studies have previously used the theory of planned behaviour to *predict* provision of weight management interventions within the context of midwifery. The current project provides a basis for developing effective theory of planned behaviour-based interventions within this context by identifying the relative importance of theory of planned behaviour constructs in predicting behavior.

In preconception setting, attitude was the strongest predictor of intention. Pre-clinical student midwives who held more positive attitudes towards preconception weight management interventions reported a stronger intention to provide such care. In addition, subjective norm and perceived behavioural control, but not autonomous motivation, were also predictors of intention to provide preconception weight management interventions. This pattern of findings supports Hypothesis 1 but not Hypothesis 2 within the preconception setting. In the antenatal setting, subjective norm, attitude, and autonomous motivation were all independent predictors of antenatal intention, with attitude the strongest predictor of

intention. Perceived behavioural control did not predict intention within the antenatal setting. This provides partial support for Hypothesis 1 and support for Hypothesis 2.

The finding that attitude and subjective norm were consistent predictors of intention across both contexts accords with the theory of planned behaviour. For examples, meta-analyses that have investigated the theory of planned behaviour have shown consistent links between each of these constructs and intention within ‘behaviour’ (Armitage & Conner, 2001), ‘health behaviour’ (McEachan, Conner, Taylor, & Lawton, 2011), and ‘clinician behaviours’ (Godin et al., 2008). While, attitudes have previously been identified as a barrier to provision of weight management advice to pregnant and preconception women (Cogswell, Perry, Schieve, & Dietz, 2001), this is one of the first studies to quantitatively demonstrate a link between the attitudes that (trainee) health professionals hold towards provision of such interventions and their intention to provide them.

Subjective norm has not previously been formally investigated in the context of provision of weight management interventions by midwives. However, these findings are consistent with the findings of qualitative research that suggest concerns about how patients will react to conversations about weight is a major barrier to midwives providing weight management to overweight and obese women (Furness et al., 2011; Schmied, Duff, Dahlen, Mills, & Kolt, 2011). While it is certainly the case that some women will react negatively to midwives broaching their weight, especially when health professionals engage in discussions that increase stigma (Furber & McGowan, 2011), meta-synthesis of data from qualitative studies in the UK suggests that overweight and obese women want specific advice regarding weight management that is tailored to their circumstances and delivered in a non-judgemental manner (Furber & McGowan, 2011). The finding that some women report relying on midwives to discuss weight gain during pregnancy, and assuming that a lack of advice from midwives implies that it is not important (Olander, Atkinson, Edmunds, & French, 2011),

suggests that women do see this as an important part of midwives' professional role. As such, coupling information regarding patient's views regarding discussion of weight management before and during pregnancy with skill development which allows midwives to engage in appropriate non-judgemental care, may be an important factor in improving provision of weight management interventions before and during pregnancy.

The finding that autonomous motivation was correlated with intention in both the preconception and antenatal contexts, and was a significant independent predictor of antenatal intention, is consistent with self-determination theory. Similarly, past research also demonstrates that autonomous motivation is associated with qualified health professionals' provision of weight management interventions (Koponen, Simonsen, & Suominen, 2017).

The finding that perceived behavioural control was not a predictor of pre-clinical student midwives' intention to provide weight management interventions within antenatal care setting suggests that the extent to which pre-clinical student midwives feel that they have the skills and resources required to provide interventions to pregnant women is not a predictor of their intention to do so. This is inconsistent with previous research conducted with practicing midwives, which demonstrated that those who report a lack of confidence and relevant training is a significant barrier to them being able to provide interventions (Heslehurst et al., 2013; Power et al., 2006). Given the educational context of the students in this study, it may be the case that students with low levels of confidence are in that state of 'conscious incompetence' where they highly aware they are in training and are yet to master the skills, and are hoping this will be addressed during their degree. If those students believe that they will gain relevant skills during their training, it could help to explain why current perceived behavioural control does not influence their intention to provide antenatal weight management interventions.

Strengths and Limitations

This study provides valuable insights into the factors that underlie pre-clinical student midwives' intentions to provide weight management interventions once they enter clinical practice. The results of the study can inform targeted curriculum changes to ensure midwives incorporate weight management interventions into their standard clinical practice, once they have completed their studies. However, the findings should be considered in the context of the limitations of the current study design. For example, while students undertaking midwifery degrees in all Australian universities were eligible to take part in the study, the majority of participants were located in Victoria, and all were female. While this may be a reflection of the overall makeup of midwifery students within Australia (Australian Government Department of Health, 2016; Nursing and Midwifery Board of Australia, 2017), caution is warranted when generalising these results to other student cohorts and the population of pre-clinical student midwives more broadly.

It is also important to acknowledge that this study did not investigate the extent to which pre-clinical student midwives' intentions were predictive of their future behaviour regarding implementation of weight management interventions in the preconception and antenatal contexts. While this is beyond the scope of this study, findings from other studies (Godin et al., 2008; Godin & Kok, 1996; Webb & Sheeran, 2006) suggest that intentions do predict future behaviour. It would be expected that midwives' beliefs would change over time, and as they gain experience as practitioners, however, from the perspective of understanding the educational needs of pre-clinical midwifery students during training, insight into the determinants of their intentions to practice preconception and antenatal weight management interventions are a valuable focal point.

Implications and Recommendations for Practice

Current findings suggest that curriculum changes that support and increase pre-clinical student midwives' intention should focus on these specific correlates of intention in

order to foster long term changes in clinical practice. This might involve a greater focus on emphasising the positive benefits of weight management interventions in the preconception and antenatal periods (attitudes), and the extent to which patients, colleagues and peers would approve of such clinical practice (subjective norm) since these factors predict intention in both settings.

However, given the relationship between autonomous motivation and intention to provide antenatal interventions, attempting to increase intention in a manner that is perceived as imposing external pressure that is inconsistent with student midwives' values and goals may lead to decrease in intention to deliver weight management interventions within the antenatal setting. Mean scores for each of these predictors indicate that there is scope to increase each of these sets of beliefs before a ceiling effect is observed.

It is important to acknowledge that didactic education alone is unlikely to shift the social cognitive predictors of intention. Instead, the education setting might be the ideal environment to influence these variables through strategies such as mentoring, patient stories, and reflective practice. Regardless of how they are implemented, changes to the education and training of midwives should be carefully considered in order to understand their impact of these important determinants of intention to engage in this critical clinical skill.

Areas for Future Research

While it was beyond the scope of this study, future research may wish to focus on the factors that contribute to unexplained variance in intention to provide weight management interventions before and during pregnancy. Research from other contexts would suggest that affective components (such as emotion), risk perceptions, and moral norms (see: Fishbein & Ajzen, 2010) could account for some variance in intention that is not captured by the theory of planned behaviour or self-determination theory. In addition, while this study provides important insight into potential avenues to target in curriculum changes to support the

development of student midwives' intentions to provide weight management interventions, it will be important to evaluate the effect of any such changes.

Conclusions

Researchers and clinicians have suggested a need for relevant training within the entry-to-practice midwifery curriculum in order to address barriers to midwives providing weight management interventions (Heslehurst et al., 2013; Power et al., 2006). This study provides important insight into some of the psychological predictors of intention to deliver weight management interventions and thus areas where curriculum changes could be most useful. In the antenatal context, intentions to provide weight management interventions are strongest amongst pre-clinical student midwives who hold more positive attitudes towards provision of such interventions, who feel that others would approve of them providing such interventions, and that the provision of weight management interventions would reflect their own values and interests rather than external pressure. In the preconception context, intention to provide weight management interventions was strongest amongst pre-clinical student midwives who held more positive attitudes, who felt that others would approve of them, and believed that provision of such weight management interventions was within their control. Curriculum changes to improve student midwives intention to provide weight management interventions should focus on these specific correlates of intention in order to engender improvements in clinical practice.

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