Smoked carrots

Dr. Marita Lynagh

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Dr. Marita Lynagh of the University of Newcastle, Australia, works in the field of public health and behaviour. Here she talks to us about her recent work examining incentives as a way to lower smoking rates amongst pregnant women.

Could you discuss your background?

I have worked as an academic and health behaviour scientist for 20 plus years with research interests in number of different public health issues including smoking cessation. I first became interested in the potential of financial incentives after witnessing the success of two national incentive programs implemented over a decade ago to address falling birth and child immunisation rates. The application of incentives as a 'carrot' to encourage smoking cessation is particularly suited to pregnancy because of its defined time period and the recurring contact that occurs during routine antenatal care. Yet a trial had never been contacted in Australia to evaluate the feasibility of financial incentives for quitting smoking during pregnancy.

What was your most significant research finding so far?

One of the most interesting and 'significant' findings from this trial was the low consent rate of women willing to participate in the trial. Our belief is that it has a lot to do with the 'timing'; of being invited to participate in a smoking cessation trial quite late in the pregnancy. Most women who quit smoking in pregnancy usually do so early in the first trimester, soon after discovering they are expecting. Many will also 'cut down' on the number of cigarettes they smoke. But a certain proportion continue to smoke for the duration of the pregnancy. It was this 'hard-core' group that our trial had attempted to recruit. We suspect that a number of these women had wanted to quit, and possibly made one or more unsuccessful attempts. By the time we invited them to participate they had convinced themselves that quitting later in pregnancy won't make any difference to the baby – as any potential 'damage' would have already been done.

From your results, there is not much difference between the $20 and $40 groups in terms of quitting. Do you think this is a lack of statistical power or that the actual value of the incentive is less important?

It is difficult to draw clear conclusions about the impact of the size of the financial reward based on the results of our trial, largely due to the small sample size and lack of statistical power. Certainly the results are suggestive of reward value not greatly effecting rates of quitting, however it is also possible that the gap between the conditions (i.e. $20 versus $40 reward) was not sufficient to produce an effect. Would a $20 reward versus a $200 reward have resulted in a difference in quit rates? Further research is needed to answer this question.

Providing pregnant smokers with incentives to quit seems to be fairly controversial, do you expect that this will impact on the uptake of the method?

There has been, and still remains, a degree of controversy and concern over perceived moral issues associated with the idea of 'paying' people to change their health behaviour. Interestingly, 'pay-for-performance' initiatives implemented in a number of countries to change the behaviour of medical practitioners have received much less controversy. Our own research indicates that smokers are much more receptive to the idea of paying someone to quit compared to non-smokers. This is not an unsurprising finding. There is general caution and a reluctance by others to implement an incentive program for pregnant smokers, but this is to be expected. It would be of greater concern if such a strategy was quickly and readily adopted before we have good evidence of its effectiveness.

What was the biggest obstacle you've overcome during your research?

Gaining funding to conduct a large-scale efficacy trial was a challenge. After numerous submissions over five years, we eventually succeeded in receiving a (reduced) grant-in-aid from the National Heart Foundation of Australia to conduct a feasibility trial. The next biggest hurdle was getting ethical clearance from all the relevant research ethics committees. There were also a number of 'logistical' obstacles that were overcome – related to conducting a research trial in a busy, crowded antenatal out-patient clinic in a public hospital.

How would you like to extend your research? Have you another trial planned as a follow-on to the current one?

We have already begun discussions about potential collaborations on a trial with Aboriginal women in Australia. Rates of smoking during pregnancy among Aboriginal women and other socially disadvantaged women are higher than the national average, and the health problems associated with smoking in pregnancy (e.g. premature birth and low birthweight) are more prevalent in these populations. We are also exploring options for 'reaching' women earlier in their pregnancy, as most women don't begin their hospital antenatal care program until their second trimester. Encouraging smokers to quit earlier in pregnancy would be much better for their babies, and women may be more amenable to the idea at an earlier stage of pregnancy. We would also like to investigate 'vouchers' in place of cash rewards, as a number of participants indicated that this may be more acceptable.

What would be your 'dream' research project?

My 'dream' research project is really any project that leads to meaningful improvement to the health and/or quality of life of people. It's not just about the size of the grant or the number of publications, it has to actually make a positive difference to someone somewhere.

Of cigarettes and carrots

The University of Newcastle is a leading Australian university with a strong focus on medical research. The School of Medicine and Public Health, as the largest school within the Faculty of Medicine, marries this tradition to a focus on teaching the medical students of tomorrow.

For several thousand years, humans have cultivated and smoked tobacco for its ability to alter our mental state. This long-running history began with homemade pipes and gradually progressed to the industrially-manufactured cigarettes we know today. Beginning in the 1920s, however, doctors began to observe that smoking was detrimental to our health, leading to heart attacks, lung cancer, pulmonary disease, and numerous other illnesses. A number of studies, reports, and law-suits followed this, but once the dust had settled smoking came to be considered the leading preventable cause of death worldwide. Indeed, the majority of health authorities around the world are united in their desire to discourage smoking amongst their populations.

If the stick fails to work, what about the carrot? How incentives assist pregnant women in quitting cigarettes.

However this is easier said than done. Nicotine, the psycho-active compound found within tobacco, is highly addictive, which thus makes efforts to quit smoking exceptionally difficult. The difficulty of quitting has led to a large market of alternative nicotine-based products (patches, e-cigarettes, etc.), as well as a number of government programs designed to help smokers. These range from the financial (extra taxes on cigarettes) to the graphic (images of cancer-riddled lungs on every pack) to the, well, non-graphic (requiring plain packaging on every cigarette carton). Australia is considered to be a leader in this field, having pushed through plain packaging laws only a few years ago in the face of fierce opposition from tobacco groups.

Despite these efforts, smoking is still widespread throughout the world, it is estimated that over 1.2 billion people smoke tobacco – with the majority of these living in developing countries. The highest rates of smoking are seen in men, in residents of developing countries, or members of disadvantaged social groups. Thus the majority of countries use targeted programs to assist these vulnerable groups to quit smoking, using the often limited healthcare budget in the most effective way possible.

One major risk group is that of pregnant women. Tobacco smoke delivers a number of chemicals to the bloodstream of the mother, many of which can have detrimental effects on the unborn child. Observational studies have noted that smoking during pregnancy can lead to increased risk of complications, low birthweights, and placental abnormalities. Programs targeting pregnant women are thus commonly used by healthcare agencies, although with the same problem as seen in the wider community: quitting is really, really hard.

THE CARROT, NOT THE STICK

The majority of anti-smoking campaigns are rooted in negatives: smoking gives you cancer, your lungs are full of tar, every breath is doing you damage, etc. And yet, they still fail to work all the time – around 10% of women still smoke

during pregnancy. A new type of thinking has thus slowly started to emerge: if the stick fails to change behaviour, what about the carrot? This is the basis of the idea of conditional incentives – a reward, such as money or a voucher, provided only when the patient can avoid the negative behaviour – in this case smoking.

Interesting idea, but does it work? This is where Dr. Lynagh of the University of Newcastle, Australia comes in. Her research career has lately focused on the effectiveness of incentive-based programs in helping pregnant women to quit smoking. Their most recent trial, known as Project ENtiCe, followed 42 pregnant women, all current smokers. For every scheduled antenatal clinic visit at which they were able to show that they had avoided smoking (as verified by biochemical analysis), they were given an immediate cash reward of $20 or $40 Australian dollars. The reward amounts increased incrementally by $20 or $40 each time they returned a negative test – or in the case of the control group, no money at all. They then followed these women right up to delivery to see how effective the process was.

By the end of the trial it seemed that the incentives were a definite improvement, while only 15% of the control group managed to quit during the study, the number rose to 20% and 22% for the $20 and $40 groups respectively. The incentive groups also tended to quit earlier during the pregnancy and stay cigarette-free for longer periods of time. Although the drop-out rate was relatively high at 28%, this is common to almost all smoking-cessation interventions, as participants lose faith in their own ability to succeed. Interestingly, the majority of smokers believed that vouchers would be a more appropriate incentive than the cash reward given during the trial.

From these results it seems that incentives may help people to quit. But does the size of the incentive matter? While the majority of participants thought that higher payments would make for better incentives, the study did not show any difference in quitting rates between the incentive groups. This may be simply due to the small number of participants in the study, or may indicate that incentive size is not as important. Dr. Lynagh is sanguine about the possibilities, believing that only with further, larger trials will the true answer be identified. After all, as she says, "Sometimes the most significant research finding is not the one that we have specifically searched for".

USE CARROT? (Y/N)

If, as it seems, incentives provide a way to encourage pregnant women to quit smoking – then why don't we just do it? One problem with this approach is that it is somewhat controversial: every dollar used needs to come from elsewhere in the budget, and many disagree with the idea of paying people to do something that is, after all, in their own interest. Furthermore, they say, is it fair to pay some to quit, when others can quit smoking by themselves? To further understand the nuances of public opinion, Dr. Lynagh's group conducted surveys of pregnant women regarding their opinion on the matter.

The results indicated that resistance to the idea remained high. Sixty percent of respondents either disagreed or strongly disagreed that paying pregnant smokers to quit was a good idea. Only 30% of respondents thought that it would work at all, (a further 22% were undecided). And when asked how much would be a reasonable amount to pay, 62% said that zero was a reasonable number. A common viewpoint appeared to be that there was a lack of fairness – why should smokers be paid to quit when non-smokers aren't paid to be healthy?

Despite this, however, many alternative viewpoints remained. Smokers, perhaps unsurprisingly, were much more likely to believe that incentives were a good idea. Non-smokers also believed the idea had promise, feeling that payments over a range from 50-1000 Australian dollars were a reasonable incentive to quit. Dr. Lynagh notes that many of these opinions are inconsistent with similar schemes for other target groups. "Interestingly," she commented, "'pay-for-performance' initiatives implemented in a number of countries to change the behaviour of medical practitioners have received much less controversy".

Is this then an idea which the population will come around to, as further studies indicate the effectiveness of incentive-based programs? Dr. Lynagh is relatively unconcerned, her focus is on determining what works best for patients. "It's not just about the size of the grant or the number of publications", she comments, "it has to actually make a positive difference to someone somewhere." It is this approach to improving lives which serves her well in her quest to help the children of tomorrow.

Researcher Profile

Dr. Marita Lynagh
Senior Lecturer
School of Medicine and Public Health
University of Newcastle

CONTACT
E: marita.lynagh@newcastle.edu.au
T: +61 24042 0545
W: https://www.newcastle.edu.au/profile/marita-lynagh

Dr. Lynagh has been researching public health for over 20 years, particularly focusing on changing population behaviour for better health. Her successful research career has led to over 30 publications in a number of fields including smoking control, alcohol harm-reduction, promoting activity, and supporting cancer survivors. She has matched this to a strong history of teaching undergraduates and postgraduates, receiving a number of awards for excellence in education.

KEY COLLABORATORS
Billie Bonevski, Priority Research Centre for Health Behaviour, University of Newcastle, Hunter Medical Research Institute
Rob Sanson-Fisher, Priority Research Centre for Health Behaviour, University of Newcastle, Hunter Medical Research Institute
Ian Symonds, School of Medicine and Public Health, University of Newcastle, Hunter Medical Research Institute
Anthony Scott, Melbourne Institute of Applied Economic Social Research, The University of Melbourne
Alix Hall, Priority Research Centre for Health Behaviour, University of Newcastle, Hunter Medical Research Institute

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