

Panels, tables, and legends for figures

Effects of the Informed Health Choices podcast on the ability of parents of primary school children in Uganda to assess claims about treatment effects: a randomised trial

Panel: Research in context

Evidence before this study

Previous research has shown that people commonly overestimate the benefits and underestimate the harms of treatments, and their ability to assess claims about the effects of treatments is often limited. This problem is important in low-income countries, where people have few resources to waste. Many learning resources are available to teach critical appraisal skills to non-health professionals. However, few of these have been formally evaluated. Systematic reviews of strategies to improve critical thinking more broadly have found that interventions targeted at adults and strategies that focus on health, on average, have small effects.

Added value of this study

We believe this is the first randomised trial of a podcast designed to improve the ability of non-health professionals anywhere to assess claims about treatment effects. We evaluated the effects of a podcast designed for parents of primary school children in Uganda. We found that after listening to the podcast, the proportion of parents with a passing score on a test that measures their ability to assess claims about treatment effect was 70.5% compared to 37.7% of parents who listened instead to a series of public service announcements on the same topics, an increase of 34%. No adverse events were reported. The podcast also improved the parents' confidence in their abilities to assess such claims, but there was little evidence of any effect on their intended behaviours.

Implications of all the available evidence

It is uncertain what the long-term impacts of using the podcast are, what if any impact it will have on actual health choices and health outcomes, or how transferable the findings of this study are to other countries. This study shows that it is possible for an intervention to improve the critical appraisal skills of lay adults in a low-income country, who have no more than primary school education. Our findings do not indicate what the effects of simply offering the podcast would be. We have also demonstrated the potential of a strategy that could be linked to interventions to improve the abilities of children to think critically about treatment claims, so that parents and children can learn these skills together.

Table 1: The nine key concepts included in the podcast²⁶

Concept	Explanation	Implication
Claims		
Treatments may be harmful	People often exaggerate the benefits of treatments and ignore or downplay potential harms. However, few effective treatments are 100% safe.	Always consider the possibility that a treatment may have harmful effects.
Personal experiences or anecdotes (stories) are an unreliable basis for assessing the effects of most treatments	People often believe that improvements in a health problem (e.g. recovery from a disease) was due to having received a treatment. Similarly, they might believe that an undesirable health outcome was due to having received a treatment. However, the fact that an individual got better after receiving a treatment does not mean that the treatment caused the improvement, or that others receiving the same treatment will also improve. The improvement (or undesirable health outcome) might have occurred even without treatment.	Claims about the effects of a treatment may be misleading if they are based on stories about how a treatment helped individual people, or if those stories attribute improvements to treatments that have not been assessed in systematic reviews of fair comparisons.
A treatment outcome may be associated with a treatment, but not caused by the treatment	The fact that a treatment outcome (i.e. a potential benefit or harm) is associated with a treatment does not mean that the treatment caused the outcome. For example, people who seek and receive a treatment may be healthier and have better living conditions than those who do not seek and receive the treatment. Therefore, people receiving the treatment might appear to benefit from the treatment, but the difference in outcomes could be because of their being healthier and having better living conditions, rather than because of the treatment.	Unless other reasons for an association between an outcome and a treatment have been ruled out by a fair comparison, do not assume that the outcome was caused by the treatment.
Widely used treatments or treatments that have been used for a long time are not necessarily beneficial or safe	Treatments that have not been properly evaluated but are widely used or have been used for a long time are often assumed to work. Sometimes, however, they may be unsafe or of doubtful benefit.	Do not assume that treatments are beneficial or safe simply because they are widely used or have been used for a long time, unless this has been shown in systematic reviews of fair comparisons of treatments.
Opinions of experts or authorities do not alone provide a reliable basis for deciding on the benefits and harms of treatments	Doctors, researchers, patient organisations and other authorities often disagree about the effects of treatments. This may be because their opinions are not always based on systematic reviews of fair comparisons of treatments.	Do not rely on the opinions of experts or other authorities about the effects of treatments, unless they clearly base their opinions on the findings of systematic reviews of fair comparisons of treatments.
Comparisons		
Evaluating the effects of treatments requires appropriate comparisons	If a treatment is not compared to something else, it is not possible to know what would happen without the treatment, so it is difficult to attribute outcomes to the treatment.	Always ask what the comparisons are when considering claims about the effects of treatments. Claims that are not based on appropriate comparisons are not reliable.
Apart from the treatments being compared, the comparison groups need to be similar (i.e. 'like needs to be compared with like')	If people in the treatment comparison groups differ in ways other than the treatments being compared, the apparent effects of the treatments might reflect those differences rather than actual treatment effects. Differences in the characteristics of the people in the comparison groups might result in estimates of treatment effects that appear either larger or smaller than they actually are. A method such as allocating people to different treatments by assigning them random numbers (the equivalent of flipping a coin) is the best way to ensure that the groups being compared are similar in terms of both measured and unmeasured characteristics.	Be cautious about relying on the results of non-randomized treatment comparisons (for example, if the people being compared chose which treatment they received). Be particularly cautious when you cannot be confident that the characteristics of the comparison groups were similar. If people were not randomly allocated to treatment comparison groups, ask if there were important differences between the groups that might have resulted in the estimates of treatment effects appearing either larger or smaller than they actually are.

Concept	Explanation	Implication
The results of single comparisons of treatments can be misleading	A single comparison of treatments rarely provides conclusive evidence and results are often available from other comparisons of the same treatments. These other comparisons may have different results or may help to provide more reliable and precise estimates of the effects of treatments.	The results of single comparisons of treatments can be misleading.
Choices		
Treatments usually have beneficial and harmful effects	Because treatments can have harmful effects as well as beneficial effects, decisions should be informed by the balance between the benefits and harms of treatments. Costs also need to be considered.	Always consider the trade-offs between the potential benefits of treatments and the potential harms and costs of treatments.

Table 2: Main podcast episodes

	Claim	Concept	Second example
Episode 1 Benefits and harms	There are herbal medicines for malaria that cure malaria and do not have any bad effects.	Few effective treatments are 100% safe, and Treatment decisions depend on the balance between the benefits and the harms.	Quinine can cure malaria. It can also give you nausea and make you vomit.
Episode 2 Comparisons	Quail eggs make you very strong.	Health researchers must compare treatments for us to be sure about their effects.	Sleeping in mosquito nets stops people from getting malaria.
Episode 3 Personal experiences	Putting cooking oil on a burn will heal it.	Someone's personal experience is not a reliable basis for claims about the effects of a treatment.	Cow dung heals burns.
Episode 4 Associations	A lot of women gain weight when they take contraceptive pills.	If there is simply an association between a treatment and something happening, that does not necessarily mean that the treatment caused it.	In the maize season, many people get malaria. So, some people say eating a lot of maize causes malaria.
Episode 5 Traditions	An herbal treatment called kyogero stops babies from getting infections.	How many people have used a treatment or how long a treatment has been used are not reliable bases for claims about the effects of treatments.	Nanyonga's soil cures HIV/AIDS.
Episode 6 Experts	Taking some hot pepper will heal ulcers.	Claims made by experts are not always right.	Eating good foods and exercising will cure HIV.
Episode 7 Fair comparisons	Group support is helpful for someone who is depressed.	Large and fair comparisons are a good basis for claims about the effects of treatments.	ARVs helps people with HIV/AIDS live longer.
Episode 8 Single comparisons	Washing hands with soap does not stop children from getting diarrhoea.	Findings from just one small study are not enough to be sure about the effects of a treatment. To be more sure, health researchers must add up findings from all the fair comparisons of the same treatments.	Wearing helmets when riding motorcycles saves lives.

Table 3: Characteristics of the participants

		Control group (N=341)		Podcast group (N=334)		Total (N=675)
		Included	Dropped out	Included	Dropped out	Included
Completed tests		80.1% (273)	19.9% (68)	86.2% (288)	13.8% (46)	83.1% (561)
Language*	Luganda	86.8% (237)	86.8% (59)	88.2% (254)	91.3% (42)	87.5% (491)
Education	Primary	52.7% (144)	48.5% (33)	50.3% (145)	47.8% (22)	51.5% (289)
	Secondary	24.9% (68)	33.8% (23)	30.9% (89)	32.6% (15)	28.0% (157)
	Tertiary	22.3% (61)	17.6% (12)	18.8% (54)	19.6% (9)	20.5% (115)
Training in research†	Yes	30.8% (84)	16.2% (11)	33.3% (96)	15.2% (7)	32.1% (180)
Prior participation in research‡	Yes	27.1% (74)	16.2% (11)	25.0% (72)	17.4% (8)	26.0% (146)
Sex	Women	76.2% (208)	79.4% (54)	76.7% (221)	78.3% (36)	76.5% (429)
Sources of healthcare§						
	Government health facility	59.7% (163)	66.2% (45)	61.5% (177)	67.4% (31)	60.6% (340)
	Private not-for-profit health facility	9.2% (25)	16.2% (11)	11.1% (32)	17.4% (8)	10.2% (57)
	Private for-profit health facility	39.2% (107)	47.1% (32)	32.3% (93)	47.8% (22)	35.7% (200)
	Alternative medicine practitioners	2.6% (7)	1.5% (1)	2.8% (8)	4.3% (2)	2.7% (15)
Advice about treatments**						
	Friends/Relatives	28.2% (77)	41.2% (28)	16.0% (46)	65.2% (30)	21.9% (123)
	Health workers	67.0% (183)	88.2% (60)	81.9% (236)	84.8% (39)	74.7% (419)
	Community leaders	1.5% (4)	4.4% (3)	2.1% (6)	4.3% (2)	1.8% (10)
	Radio/TV programs	11.4% (31)	30.9% (21)	6.6% (19)	28.3% (13)	8.9% (50)
	Alternative medicine practitioners††	1.8% (5)	1.5% (1)	2.8% (8)	4.3% (2)	2.3% (13)
	Internet	0.7% (2)	2.9% (2)	1.0% (3)	2.2% (1)	0.9% (5)

* Proportion of participants who elected to listen and take the test in Luganda, versus English.

† "Have you ever had any training in scientific research (statistics, epidemiology or randomized trials)?"

†† "Have you ever been a participant in a scientific research study?"

§ "If you or your family member are unwell, where do you commonly seek medical attention?" (select all that apply)

** "If you need to make a decision on what treatments to use, where do you usually get advice?" (select all that apply)

†† e.g. herbal medicine practitioners

Table 4: Main results - test scores

	Control group N=273	Podcast group N=288	Adjusted odds ratio*	Adjusted difference*
Primary outcome				
Mean score, %	Mean score 52.4% (SD 17.6%)	Mean score 67.8% (SD 19.6%)		Mean difference: 15.5% (95% CI 12.5% to 18.6%) p<0.0001
Passing score (≥ 11 out of 18 correct answers)	37.7% of parents (N=103)	70.5% of parents (N=203)	4.2 (95% CI 2.9 to 6.0) p<0.0001	34.0% more parents (95% CI 26.2% to 40.7%)
Secondary outcomes				
Mastery score (≥ 15 out of 18 correct answers)	6.2% of parents (N=17)	31.6% of parents (N=91)	7.2 (95% CI 4.1 to 12.4) p<0.0001	26.0% more parents (95% CI 15.2% to 38.8%)

* The odds ratios are adjusted for the stratification variables (education and child's study group in the Informed Health Choices primary school trial). The odds ratios have been converted to differences using the control group as the reference.

Legends for figures

Figure 1: Trial profile

File: Figure 1 IHC podcast trial-profile.pptx

Figure 2: Results for each key concept

File: Figure 2 Results for each concept.pdf

Legend

* There were two multiple-choice questions (MCQs) for each concept. The proportions are for the percent of parents who answered both questions correctly.

† The odds ratios are adjusted for the stratification variables (education and child's study group in the Informed Health Choices primary school trial). The odds ratios have been converted to differences using the control group as the reference.

Figure 3: Comparison of passing and mastery scores for children, parents, and teachers

File: Figure 3 Comparison of passing and mastery scores for children, parents, and teachers.pdf

* The odds ratios are adjusted for the stratification variables used in each of the trials and clustering in the primary school trial. The odds ratios have been converted to differences using the control group as the reference for the parents and the intervention schools as the reference for the children and teachers.³²

† A passing score for parents was ≥ 11 out of 18 correct answers for questions that addressed nine key concepts. A passing score for children and teachers was ≥ 13 out of 24 correct answers for questions that addressed 12 key concepts.³²

‡ A mastery score for parents was ≥ 15 out of 18 correct answers for questions that addressed nine key concepts. A passing score for children and teachers was ≥ 20 out of 24 correct answers for questions that addressed 12 key concepts.³²