Changing Perceptions and Efficacy of Generic Medicines: An Intervention Study

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Objective: Generic medicines provide a safe and economical medical treatment and are used routinely throughout the world. However, a significant proportion of individuals view generic medicines as less safe, less effective and of lower quality compared with their equivalent branded medicines. This study aimed to investigate the effect of an educational intervention on improving perceptions and perceived efficacy of generic medicines. Method: Seventy participants who experienced frequent tension headaches were randomized to receive an educational video about generic medicines or a control video. Participants then alternatively took branded and generic ibuprofen to treat their next two consecutive headaches. Changes in perceptions of generic medicines, pain relief and side effects were measured. Results: The intervention was effective in modifying and improving perceptions of generic medicines in the areas of understanding (p < .05), preference for a generic medicine to treat a serious illness (p < .05), and overall preference for generic medicines (p < .01). However, contrary to predictions, participants in the intervention group reported significantly less pain relief (p = .03) and more symptoms (p = .04) after taking generic ibuprofen compared with branded ibuprofen. Conclusion: This study identified that an educational intervention is effective in modifying and improving perceptions of generic medicines but produced paradoxical effects on drug efficacy and side effects. These findings suggest that complex mechanisms are involved in the relationship between perceptions and drug efficacy and contradict the assumption that improving attitudes toward generic medicines will have a flow-on effect to improving health outcomes.

Keywords: generic medicines, medication beliefs, drug efficacy, expectations, intervention

Generic medicines are used routinely around the world to treat a range of illnesses and are intended to provide the same therapeutic effect as a branded medicine, but for a much cheaper price (Alrasheedy et al., 2014). In order to be approved for use, a generic medicine must be bioequivalent to its corresponding branded medicine and must be the same in terms of dosage, directions for use, intended use, strength, safety, and quality (Babar et al., 2011; Howland, 2009). Generic medicines must also meet the same batch requirements for quality, strength, and purity (Dunne, Shannon, Dunne, & Cullen, 2013).

The increasing pressure on health care budgets means generic drugs offer an attractive alternative for health organizations to maintain patient access to treatment, but at a lower cost than branded medication. However, recent reviews have shown that a significant proportion of the population, usually around 20%–30%, have negative perceptions of generic medicines, viewing them as less safe, less effective and of lower quality than their branded equivalents (Colgan et al., 2015). A similar number also seem to believe that although generic medicines can be used for minor illnesses they are inappropriate for treating serious disease or when drug reliability is critical (Babar et al., 2010; Figueiras, Cortes, Marcelino, & Weinman, 2010; Ganther & Kretling, 2000). For example, researchers have found that consumers are less comfortable accepting a prescription for a generic contraceptive or heart medication, and most comfortable accepting a generic prescription for pain or antibiotic medication (Malloy, 1981).

Expectations and perceptions of medicines play an important role in influencing the effectiveness of medication through the placebo and nocebo response (Bartley, Faasse, Horne, & Petrie, 2016; Colloca, Vighetti, Sigaudo, & Benedetti, 2007; Dutile, Kaptchuk, & Wechsler, 2014; Enck, Bingel, Schedlowski, & Rief, 2013; Faasse, Cundy, Gamble, & Petrie, 2013; Faasse & Petrie, 2013; Leedham, Meyerowitz, Muirhead, & Frist, 1995). For example, researchers have found that positive treatment expectancy can double the analgesic effect of Remifentanil, a powerful opioid analgesic, whereas negative expectations can abolish any analgesic benefit of the drug (Bingel et al., 2011). Expectations about medicines may be generated from a wide range of sources, including previous experience, information from health professionals, the

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opinions of other social contacts, advertising, as well as knowledge of the drug’s price and brand (Colloca & Miller, 2011).

Branding medication with a known product name or pharmaceutical company name bestows a drug with added assurance of efficacy and safety. Branded medicines are reported to be more effective for pain relief than their generic equivalents (Branthwaite & Cooper, 1981). Branding seems to confer treatment benefits, even in the absence of an active ingredient (Faasse, Martin, Grey, Gamble, & Petrie, 2016). Although blinded randomized controlled trials have found generic medicines to be no less efficacious or more harmful than their branded equivalents (Howland, 2010), significant numbers of patients who switch from a branded to a generic medicine report adverse effects (Kjoenniksen, Lindbaek, & Granas, 2006). A recent study investigated the effects of changing from a branded medicine to an equivalent generic medicine. The study found that participants who switched to a generic medicine reported significantly more side effects and reduced medication effectiveness, despite the fact that all drugs were in fact placebo. This suggests that these effects are likely to be caused by differences in expectations about generics rather than by the pharmaceutical properties of the drugs (Faasse et al., 2013).

Although perceptions of generic medicines impact on drug effectiveness and side effects, to date no studies have investigated ways in which we can modify or improve negative perceptions and whether this can subsequently affect drug efficacy. This prospective, between-subjects experimental study aimed to investigate the effect of an educational intervention on the perceptions, efficacy, and side effects of a generic analgesic medication compared with an equivalent brand name analgesic. We hypothesized that participants in the intervention group would report improved understanding and preference for a generic medication as well as show greater levels of pain relief and report fewer side effects from the generic analgesic medicine, compared with the control group.

Method

Participants were recruited to take part in a study investigating the influence of different types of information on the effectiveness of two ibuprofen treatment formulations (brand name and generic tablets) for treating headache pain. Participants were randomly assigned to view either an educational intervention video about generic medicines, or a control video containing epidemiological information about different types of headaches. Following this, participants were given one dose (two tablets, 400 mg dose) of brand name ibuprofen (Nurofen) and one dose of generic ibuprofen to take away with them to treat their next two headaches. Participants received a NZ$20 (US$15) gift voucher to thank them for their participation. Ethical approval for the study was received from the University of Auckland Human Participants Ethics Committee (Reference No. 011287).

Participants

Participants were undergraduate students (N = 70) recruited from the University of Auckland. To meet inclusion criteria participants needed to be aged between 16 and 30 years, able to read and write in English, and experience one or more headaches in an average 2-week period. Participants were excluded if they had known allergies to ibuprofen, or to other nonsteroidal anti-inflammatory medications, or to the inert binding agents in the ibuprofen tablets. In addition, participants were ineligible to participate if they were pregnant or breastfeeding, or had any of the following medical conditions for which ibuprofen use would be contraindicated: asthma, stomach ulcer, high blood pressure, impaired kidney function, heart failure, migraine or cluster headaches (which are unlikely to be adequately treated with 400 mg of ibuprofen). Participants over 30 years of age or who reported headaches with associated neurological symptoms were excluded. A total of 109 students expressed initial interest in taking part in the study. Of these, 18 were found to be ineligible, 18 did not book a time to complete the study session, and three booked a session but failed to attend and did not book another time. This resulted in 70 participants who completed the initial study session, with 35 participants randomized to the intervention group, and 35 to the control group. One participant withdrew from the study (intervention group) after the initial session for personal reasons unrelated to the research, leaving 34 participants in the intervention group.

Procedure

Data collection took place between May and September 2014. Participants attended an initial 40-min study session at the Clinical Research Centre at the University of Auckland Medical School. During this session participants were given verbal and written information about the study, and completed a written consent form. Participants then completed a baseline questionnaire assessing physical health and headache experiences, perceptions of generic medicines, physical symptoms experienced over the past week, and demographic information.

After watching the control or intervention video, participants were again asked about their perceptions of generic medicines, and completed ratings of the video they had viewed. Participants were given one dose of brand name ibuprofen and one dose of generic ibuprofen in a counterbalanced order to treat their next two headaches, and given questionnaires for each of these treatment experiences.

When they experienced a headache, participants were asked to rate their current level of pain and pain duration before taking the brand name or generic ibuprofen. Participants were asked to wait an hour before completing the rest of the questionnaire. They were then asked again to rate their level of headache pain, time taken for the treatment to work, perceived effectiveness, and to rate their experience of possible treatment side effects.

Educational Videos

Participants viewed one of two short videos (both 7 min, 50 s, long) which were developed specifically for use in this study. The intervention video was designed to improve perceptions of generic medicines. A number of health specialists (three physicians, one pharmacist, and two experts involved in the approval and funding of generic medicines) were interviewed and provided accurate information addressing common misperceptions of generic medicines. The control video comprised an interview with a consultant neurologist who spoke about different types of headaches and the global epidemiology of headaches. This was chosen as the topic for the control video so as to seem relevant to the research without changing participants’ perceptions of generic medicines.
Measures

General health and headache experience. Participants were asked how many times that they had visited their family doctor for any reason in the past year, and to describe their health compared with other people their age on a four-point scale ranging from poor to excellent. Participants were asked how often they experienced headaches on a four-point scale from 1–2 headaches each week to 7+ headaches each week. Participants were also asked to mark on a visual analogue scale (100-mm length) how severe or intense their headache pain usually is with anchors from 0 mm (no pain) to 100 mm (worst possible pain).

Perceptions of generic medicines. Participants completed eight visual analogue scales (100 mm length) that assessed previously identified common misperceptions about generic medicines (Babar et al., 2010, 2011; Hassali, Kong, & Stewart, 2007). These scales asked participants to indicate how well they understand what generic and branded medicines are (not at all to very clearly), their preference for taking a generic or branded drug (prefer branded to prefer generic), their expectations regarding a generic drug’s safety, effectiveness, quality and side effects compared with a branded equivalent (less safe/less effective/quality/fewer side effects to more safe/more effective/higher quality/fewer side effects), and their preference for a generic drug versus a branded drug for a serious illness (prefer branded to prefer generic). Participants were also asked if they had previously taken generic medicines, and whether they had experienced adverse effects from taking generic medicines. Participants completed this scale during the initial study session before and after watching their allocated video, and completed it again at the end of the study after their second treated headache.

Physical symptoms. A modified version of the General Assessment of Side Effects (GASE) was used to assess the presence and intensity of physical symptoms and sensations experienced in the previous week, as well as after taking the ibuprofen medications (Rief et al., 2011). To make the GASE more appropriate for assessment in this study, 16 commonly reported everyday symptoms and side effects associated with ibuprofen use were added to the questionnaire, making 52 items in total. Participants rated their experience of each symptom on a scale from 0 (not present) to 3 (severe). Because most symptoms were rated as not present or mild, symptoms were dichotomized (not present or present) and summed to give the total number of symptoms experienced. The same questionnaire was used to assess side effects after taking the headache treatments, and participants were asked to report both the intensity of their symptoms, and whether they thought each symptom that they had experienced was a side effect of the medication. Again, total reported symptoms and the total number of symptoms attributed as treatment side effects were summed.

Demographic information. Participants were asked to report their age, sex, ethnicity, and whether they were studying full time or part time.

Premedication headache assessment. Participants were asked to indicate the intensity of their headache pain on a 100 mm visual analogue scale, with the end points marked no pain and worst possible pain. Participants then indicated how long they had been experiencing the headache for on a 5-point scale from less than 15 minutes to longer than two hours. After completing this section, participants were instructed to take the study ibuprofen tablets, and wait one hour before completing the postmedication headache assessment.

Postmedication headache assessment. Having taken the medication, participants were asked again to indicate the intensity of their headache pain on a 100 mm visual analogue scale, with end points marked no pain and worst possible pain. Participants were asked to indicate how long the tablets took to take effect on a 6-point scale from less than 5 minutes to the tablets have not taken effect yet. Participants then indicated how effective they thought the medication was for reducing headache pain on a 5-point scale from not effective to very effective. Participants also completed the physical symptoms and side effects scale. After completing these measures for their second treated headache, participants were again asked to rate their perceptions of generic medicines.

Data Analysis

The trial was prospectively powered (80% at the 5% significance level for a tailed test) to detect a large (F = 0.4) effect size for a fixed effects omnibus one-way ANOVA (G’power v 3.1.9.2) with a total sample size of 52 participants. To protect against potential attrition the sample size was inflated by 25% to 70 participants. At the end of the trial a sensitivity analysis was performed that suggested effects as small as 0.34 could be detected with the larger sample size. These calculations were made on the basis of a single pairwise comparison at follow-up.

The data were analyzed using SPSS (Version 22). Data were assessed for normality. Nonparametric testing was used in consequent analysis of any variables that did not have a normal distribution. Independent samples t tests, Mann-Whitney U tests, and chi-square tests were used to assess any differences between the intervention group and the control group at baseline in relation to demographic, health, and psychological variables.

Linear mixed models using an unstructured covariance matrix with the random effect of participant were used to investigate the influence of the intervention on perceptions of generic medicines over time. For these analyses only interaction effects are reported, as the main effect of time and group do not provide meaningful information about the effects of the intervention. Linear mixed models were also used to investigate the effect of the intervention on changes in pain intensity and symptoms and side effects after use of branded and generic tablets. Preheadache pain scores and baseline levels of symptom reporting, respectively, were included as covariates in these models. Post hoc tests with a Bonferroni correction were used to assess significant interaction effects. An overall alpha level of .05 was used.

Results

The sample for this study was predominantly female (78.3%) with a mean age of 21 years. The majority of the sample identified as either New Zealand European (46%) or Asian (44%) with smaller proportions identifying as Maori (4%), Pacific Island (1%) and Other (4%). There were no significant baseline differences between the intervention and control groups with regard to demographic variables, general health, headache experience, physical symptoms, or perceptions of generic medicines.
Perceptions of Generic Medicines

Perceptions of generics were assessed at baseline, immediately after watching the educational video, and again after completing both headache treatment conditions. Separate analyses were used to compare the two groups (intervention and control videos) across the three time points (baseline, postvideo, follow-up).

Understanding of generic and branded medicines. Participants were asked about their perceived level of understanding about generic and branded medicines at baseline, postvideo, and at follow-up. Higher scores indicate greater reported understanding. In perceived understanding of generic medicines there was a trend toward a significant interaction effect between time and group, $F(2, 67) = 3.04, p = .06$ (see Figure 1). Post hoc tests showed that the control and intervention groups did not differ significantly in their reported understanding of generics at baseline, $p = .62$. At postvideo and follow-up the intervention group reported significantly greater understanding of generics than the control group, $ps < .001$. Both the control group, $p = .01$, and the intervention group, $p = .001$, had significant increases in their understanding of generics between baseline and postvideo. Neither group had a significant change in their self-rated understanding between the postvideo and follow-up assessments, $ps > .16$ (see Table 1).

Similar results were seen in perceived understanding of branded medicines. There was a significant interaction effect between time and group, $F(2, 67) = 4.29, p = .02$ (see Figure 1). Post hoc tests revealed that the control and intervention group did not differ in their perceptions of branded medicines at baseline, $p = .80$. The intervention group reported significantly greater understanding than the control group postvideo, $p = .001$, and at follow-up, $p = .01$. Reported understanding in the intervention group increased from baseline to postvideo, $p = .001$, and did not change from postvideo to follow-up, $p = .99$. The control group did not change between baseline and postvideo, $p = .29$, but did show a significant increase in understanding of branded medicines between the postvideo and follow-up time points, $p = .03$ (see Figure 1).

Safety, effectiveness, side effects, and quality of generic medicines. Participants were asked about perceptions of safety, effectiveness, side effects, and quality of generic medicines in comparison to branded medicines. Scores of 0 indicate strongly positive perceptions of branded drugs, scores of 50 indicate no perceived difference, and scores of 100 indicate strongly positive perceptions of generic medicines. There was no significant interaction effect between time and group with regard to perceived safety, $F(2, 67) = 0.91, p = .41$. Perceived effectiveness, $F(2, 67) = 1.15, p = .32$, or side effects, $F(2, 67) = 0.71, p = .49$. Mean perceived safety, effectiveness, and side effects scores in the control and intervention groups over time reveal that participants had accurate perceptions at baseline which did not change (see Table 1).

For perceptions of quality there was a trend toward a significant interaction effect between time and video condition, $F(2, 67) = 2.51, p = .09$. However, post hoc tests revealed a nonsignificant difference between the control and intervention groups postvideo, $p = .06$, with the control group reporting more positive perceptions of the quality of branded drugs (see Table 1). No other time or group differences were significant, $ps > .17$.

Preference for branded or generic medicines. Participants were asked about their preference for taking a branded or generic version of a prescribed medicine in general and for treating a serious illness. Scores of 0 indicate a strong preference for a branded medicine, scores of 50 indicate no preference, and scores of 100 indicate a strong preference for a generic medicine. With regard to general preference, there was a significant interaction effect between time and group, $F(2, 67) = 14.36, p = .001$ (see Figure 2). Post hoc tests show a nonsignificant difference between the groups at baseline, $p = .07$, with the intervention group reporting a somewhat greater preference for branded drugs in comparison to the control group. Postvideo this difference was reversed, with the intervention group reporting significantly greater preferences for generic medicines than the control group, $p = .001 (d = 1.03$, power achieved = .79), and this effect was still present at follow-up, $p = .01$. Between baseline and postvideo, the intervention group had a significant shift in preferences toward generic drugs, $p = .001$. Conversely, the control group’s preference showed a significant shift toward branded drugs, $p = .01$. Preferences across both groups did not change significantly between the postvideo and follow-up assessments, $ps > .18$ (see Table 1).

Figure 1. Line graph showing mean (SE) reported understanding of generic (left) and branded (right) medicines over time across the control and intervention groups.
Table 1
Means (SEs) Ratings of Perceptions of Generic Medicines at Baseline, Postvideo, and Follow-Up for the Control and Intervention Groups

<table>
<thead>
<tr>
<th>Medication ratings</th>
<th>Control group</th>
<th>Intervention group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Postvideo</td>
</tr>
<tr>
<td>Understanding of generic medicines</td>
<td>61.31 (4.91)</td>
<td>75.66 (2.56)</td>
</tr>
<tr>
<td>Understanding of branded medicines</td>
<td>67.74 (4.56)</td>
<td>75.14 (2.82)</td>
</tr>
<tr>
<td>Safety of branded and generic medicines</td>
<td>52.83 (2.29)</td>
<td>48.17 (1.98)</td>
</tr>
<tr>
<td>Effectiveness of branded and generic medicines</td>
<td>49.43 (2.60)</td>
<td>45.51 (1.81)</td>
</tr>
<tr>
<td>Quality of branded and generic medicines</td>
<td>49.11 (2.86)</td>
<td>45.69 (1.97)</td>
</tr>
<tr>
<td>Side effects of branded and generic medicines</td>
<td>53.91 (2.13)</td>
<td>50.66 (1.61)</td>
</tr>
<tr>
<td>Preference for branded or generic</td>
<td>53.26 (3.81)</td>
<td>41.29 (3.22)</td>
</tr>
<tr>
<td>Preference for treating serious illness</td>
<td>40.69 (4.26)</td>
<td>38.23 (3.63)</td>
</tr>
</tbody>
</table>

In reported preference for branded or generic medicines for treating a serious illness, there was again a significant interaction effect between time and group, $F(2, 67) = 4.96, p = .01$ (see Figure 2). Post hoc tests showed no significant baseline difference between the control and intervention groups, $p = .78$. The intervention group reported significantly higher scores (indicative of a small preference for generic medicines to treat a serious illness) both postvideo, $p = .001$, and at follow-up, $p = .03$, compared with the control group (whose scores indicated a preference for branded medicines to treat a serious illness). The control group scores did not differ significantly between any of the three time-points, $p > .99$. The intervention group scores increased between baseline and postvideo, $p = .001$. This change was maintained, with no significant difference in intervention group scores between postvideo and follow-up, $p = .38$ (see Table 1).

**Effectiveness of Branded and Generic Ibuprofen**

Participants took two 400 mg doses of ibuprofen, branded and generic tablets, in a counterbalanced order to treat their next two headaches after viewing either the control or intervention information videos. Change in pain from pre- to postheadache was assessed, as was the number of symptoms and side effects reported after each treatment. Separate linear mixed models analysis were used to assess the impact of group (control or intervention) and treatment (branded or generic) on change in pain and reported symptoms and side effects, controlling for preheadache pain and baseline symptom reporting, respectively.

**Headache pain relief.** Reported pain relief (change in pain scores) did not show a significant main effect of group, $F(1, 65.81) = 0.06, p = .81$. There was also not a significant main effect of treatment, $F(1, 63.50) = 1.65, p = .20$. There was a significant interaction effect between group and treatment, $F(1, 63.58) = 4.41, p = .04$ (see Figure 3). Post hoc tests using a Bonferroni correction revealed that in the control group, there was not a significant difference in pain relief when using the branded ($M = -34.28, SE = 2.17$) or generic ($M = -35.76, SE = 2.70$) treatments, $p = .57$. However, in the intervention group, the generic treatment ($M = -31.24, SE = 2.71$) was significantly less effective in reducing headache pain in comparison to the branded ($M = -37.38, SE = 2.19$) treatment, $p = .02$ ($d = .45$, power achieved = .62). There were no other significant differences between the groups, $p > .24$.

**Reported symptoms and side effects.** There was not a significant main effect of group, $F(1, 66.06) = 2.13, p = .15$, or treatment, $F(1, 67) = 1.06, p = .31$, on the number of reported symptoms. There was an almost significant interaction effect between group and treatment, $F(1, 67) = 3.94, p = .051$ (see Figure 4). Post hoc tests showed that when taking the branded

![Figure 2](image-url). Line graph showing mean (SE) reported preference for branded or generic drugs generally (left) and in treating serious illness (right) over time across the control and intervention groups.
treatment, participants in the intervention group ($M = 5.41, SE = 0.70$) reported significantly fewer symptoms than those in the control group ($M = 7.71, SE = 0.69$), $p = .02$. When taking the generic treatment, no significant difference in symptoms was seen between the control ($M = 7.26, SE = 0.77$) and intervention ($M = 6.85, SE = 0.78$) groups, $p = .72$. In the control group, there was not a significant difference in symptoms reported after taking the branded or generic treatment, $p = .50$. However, in the intervention group participants reported significantly more symptoms after taking the branded treatment compared with the branded treatment, $p = .04$.

Participants were also asked whether they thought the symptoms they reported were side effects of the medication. There was a significant main effect of group, $F(1, 66) = 6.22, p = .02$, on the number of symptoms designated as side effects. Participants in the intervention group ($M = 1.18, SE = 0.40$) reported significantly fewer treatment side effects than those in the control group ($M = 2.57, SE = 0.39$). For comparison to total symptom reporting, these results are presented in Figure 4 as differences between the control and intervention groups for branded, $p = .02$, and generic, $p = .35$, treatment use. There was not a significant main effect of treatment, $F(1, 67) = 0.68, p = .41$, nor was there a significant interaction effect between group and treatment, $F(1, 67) = 0.13, p = .72$.

**Discussion**

Although both the intervention and control groups reported increased understanding of generic and branded medicines after watching the videos, this effect was more pronounced in the intervention group. The control group’s reported preference was for branded medicines both in general and to treat serious illness after watching the video, whereas the intervention group reported an increased preference for generics. Perceptions of safety, effectiveness, quality, and side effects were accurate (reflecting no difference between branded and generic drugs) at baseline, and did not show substantial changes in either group in response to the videos.

Contrary to predictions, enhanced understanding of generics and reported preferences for generics in the intervention group were not reflected in an improved response to generic ibuprofen. Within the intervention group, the branded ibuprofen medication actually worked better at reducing headache pain compared with the generic tablets. No such differences were seen in the control group. Similarly, the intervention group also reported more symptoms after having taken the generic medication, compared with the branded medication. When compared with the control group, the intervention group reported fewer symptoms after using the branded treatment.

Put simply, although the intervention improved the understanding and preference for generic medicines, it reduced the efficacy of generic ibuprofen in the intervention group as well as increasing symptoms following taking the generic medication compared with the branded medication. The fact that the intervention video had a negative effect on perceived pain relief and reported symptoms...
after taking a generic medicine demonstrates that the relationship between perceptions of medication and drug effectiveness is likely to be more complex than first considered.

There may be a number of possible explanations for these findings. First, although the intervention was focused on improving perceptions of generic medicines per se, it did not address the relative perceptual hierarchy that may have existed between generic and branded medication (Faasse et al., 2013). Thus, as the intervention improved perceptions of generic medicines it may have also bolstered intervention group participants’ views of branded medicines, as the relative position of generic to branded perceptions remained unchanged. A second possible explanation is that the intervention, while improving general perceptions about generic medicines, may have also unintentionally drawn the intervention group participants’ attention to the value of branding and thus improved the response to branded medication relative to generic. It is clear from the results that the changing broad perceptions about generic medicines do not directly translate into improved efficacy of a specific generic medicine. It may be that focusing on changing specific beliefs, in terms of the effectiveness of generic medicines for a certain condition or symptom, may be a more powerful way of increasing efficacy.

Although the study has the strength of measuring changes in perceptions as well as outcome in terms of drug effectiveness and using a randomized controlled design, several limitations of the study should also be noted. First, the study used ibuprofen, a widely known and used analgesic with a well-recognized branded version (Nurofen) that participants were likely to be familiar with. Future research should consider using a novel drug, in order to control for possible bias due to familiarity or brand loyalty. The study is also limited by the University student sample which may limit the generalization of the findings and the limited time period of the study and it is not possible to know whether exposure to the medications over a longer series of headaches would have caused the same pattern of drug effectiveness. Limited power restricted our ability to see how individual differences, such as high concerns about generics or other factors, influenced reaction to the intervention and the reporting of side effects. Future studies using a similar design would need to increase the sample size in order to explore the role of these individual difference variables.

This study was the first, to our knowledge, to investigate the effectiveness of an intervention in changing perceptions and perceived efficacy of generic medicines. The intervention successfully improved perceptions of generic medicines but, contrary to predictions, the intervention improved the efficacy of and reduced symptoms reported after taking branded medicines. Thus we found modifying perceptions does not necessarily translate into improved efficacy of generic medication and may in fact reduce generic drug effectiveness. These findings contradict assumptions in existing literature that improving perceptions or attitudes toward generic medicines will have a flow-on effect to improving health outcomes (Hassali, Shafie, Jamshed, Ibrahim, & Awaisu, 2009; Mazumdar, Schommer, Hadsall, & Huh, 2013; Perri, 1989). The findings of this study highlight the importance of investigating perceptions and health outcomes concurrently. They also suggest that the link between perceptions and behavioral outcomes when it comes to generic medicines is more complex than originally thought. This study has important implications for both future research and also public campaigns that use educational material to attempt to effect change in health behaviors.

References


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