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Background

What do "average citizens" think about genetically modified foods (GMF)? Do their potential benefits outweigh their risks? Should food products containing GM ingredients be so labeled?

Surveys of attitudes toward GM foods and discussions on the topic in the US have been plentiful. The research typically indicates at least a low level of concern about GMFs. Yet GMFs continue to be prevalent in the American food marketplace. Whatever concerns Americans may have, they have not adversely impacted the production or consumption of GM foods. Indeed, there have not been sufficient political pressures in the US to require the labeling of GMFs, unlike in Europe and elsewhere around the globe.

There is not a comprehensive mandatory labeling policy in the United States at the present time. Producers may voluntarily label their products as having been made with genetically modified ingredients. Labeling is mandatory for a product that is "significantly different" from its traditional counterpart, meaning the product contains a food allergen or has altered nutritional characteristics.

As part of a program of research examining attitudes, beliefs and knowledge related to GMFs in Nebraska, in the heart of the farm belt in the US, researchers from the University of Nebraska Public Policy Center conducted two inquiries. In one study, we convened a community discussion of residents in Lincoln to discuss GMF issues. In another study, we surveyed undergraduates at the University of Nebraska-Lincoln. We were especially interested in what people in the middle of the GMF heartland would have to say about GMFs. In Nebraska, as is the case in much of the farm belt of the US, genetically modified foods are common, both in the agricultural fields as well as on consumers' plates. Thus, acceptance of genetic modification is, from all public signs, fairly high. Is it because Nebraskans are not knowledgeable about genetic modification issues? Is it that they do not find the evidence as alarming as others? Or is it that Nebraskans are not as accepting of GMFs if asked directly about them? What do Nebraskans feel and know about GMFs?

Community Discussion Study

In the community discussion study, we used a modified version of the deliberative poll approach employed by James Fishkin and his colleagues (see, e.g., Luskin et al., 2002). In our version of the community discussion, or deliberation, participants from a randomly drawn list of members from the community who accept our invitation to participate in the discussion are surveyed at the outset about their knowledge and attitudes. They are then sent neutral information (briefing) materials and asked to think about the topics beforehand. On deliberation day, they come to a community facility (often but not always the University) to discuss the issues with one another. In the discussion, the participants

are told they need not come to agreement about the topics under consideration, but they are asked to agree on a question(s) to pose to an expert panel to clarify matters that arise during the discussion. After the Q&A session with the experts, the participants return to their discussion groups where they make any final comments they wish and then complete a post-event survey. Participants are paid a nominal amount for their participation, enough to cover transportation to the discussion site and any incidental costs, such as daycare, they might incur. (For examples of this approach by the Public Policy Center in a variety of contexts, see http://ppc.nebraska.edu/ByThePeople/.)

For the GMF discussion, 48 Lincoln residents came to a public library branch on a Saturday afternoon. These 48 participants had previously been randomly selected and had already participated in an earlier community discussion on a different topic. Prior to the GMF discussion, all 48 participants completed a pre-survey on genetically modified foods and received briefing materials on the topic. (A copy of the background information is available upon request to the first author.)

When they arrived at the library for the discussion, the participants were randomly assigned to groups of 8 to 10 persons. (Some of the groups were moderated by a facilitator and other groups were not, as determined by random assignment. This “experiment” is not discussed here. For purposes of this analysis, facilitated and non-facilitated groups are combined.) Following the group discussions, which lasted 75 minutes, a panel of experts (comprised of six faculty members from the University of Nebraska-Lincoln) answered questions posed by the participants. Afterward, the participants returned to their groups and completed a post-event survey to learn whether the discussion and exposure to experts impacted their knowledge about and/or changed their opinions regarding genetically modified foods.

The data we obtained from the participants revealed they were more supportive of genetically modified food following their participation in the deliberation event than they initially were. In the pre-survey, 31% reported either a favorable (2.1%) or somewhat favorable (29.2%) attitude towards genetically modified food. In the post-survey, 73% of participants reported either a favorable (39.6%) or somewhat favorable (33.3%) attitude towards these products.

Nearly two-thirds (65%) of participants perceived the benefits of producing or consuming genetically modified food outweighed the risks. Prior to the discussions, 27% of the participants indicated they thought the benefits outweighed the risks. The proportion of people who thought the risks outweighed the benefits remained relatively stable, decreasing from 13% in the pre-survey to 10% in the post-survey. There was a sharp decline in the proportion of respondents who felt they did not have enough information to decide the balance of risks versus benefits, from 46% to 15%.

Slightly over half (52%) of the participants wanted labels identifying genetically modified food, which is significantly lower than results from other studies and represented a marked decrease from the pre-survey (87.5%). When asked what kind of information they would like to see on a label, 65% of participants felt it was very or extremely important to list warnings associated with the modification. Most felt it was not important to label why (63%) or how (65%) the ingredients were genetically modified.

Knowledge increased on 10 of the 12 questions participants were asked about genetic modifications. When asked initially about genetic modification, nearly 70% of the participants answered half (i.e., 6) of the questions correctly. After the event, eight of the 12 questions were answered correctly by 79% or more of the participants. Of the other four

questions, the percentage of respondents answering the question correctly remained the same on one question, decreased by 10.5% of respondents on another question (from 68.8% to 58.3%), and increased on two other questions (from 2% to 25% on one of the questions, and from 29% to 40% on the other).

Thus, the results from the discussion study indicate farm belt respondents are more positively than negatively oriented toward GMFs. The results also indicate they improve considerably in their knowledge about GMF issues, though no one involved (e.g., the experts) were aware of the items and thus did not "teach to the test." It is possible that participants, with a heightened awareness of questions they were already asked, were sensitive to information that was relevant for our 12 questions. But the important fact here is that the Lincoln participants improved their knowledge from their first test administration to their second.

Critics also may take issue with the discussion itself. For example, it is true that the amount of time of spent in deliberation was not especially long. However, there is not an evidence-based literature that pinpoints the optimal time of discussion. It is also true that the experts from the University represented disciplines and departments more supportive of GMFs than one might find elsewhere. But, again, there is no evidence in the literature to show an adverse impact of using academic experts who regularly present two sides of an issue in their classroom teaching regardless of their personal opinions. Perhaps experts should be "measured" beforehand in order to assess their positions on topics. That may be. Interestingly, what our efforts in the community discussion area have found, and others have found as well, is that the presence of experts in these proceedings helps to improve knowledge. So while it is likely the case that our panel of experts was more favorably inclined to GMFs than other panels might be (and there was a split in opinion by two people who attended the discussion as observers who have concerns about GMFs, one a biologist and other an organic farmer, with the biologist feeling the panel gave both sides of the issue and the farmer contending the panel did not provide strong arguments about anti-GMF views), we stand by the fact that participants' knowledge increased.

What if Nebraskans are not swayed by experts? Might there be a group of people in the farm belt who are knowledgeable about GMF matters, not influenced by pro-GMF experts, *and* still supportive of GMFs? The Survey study we conducted provides some insights.

College Student Survey Study

In the Survey study, we asked 97 college students attitude and safety perception questions about GMFs and knowledge questions designed to measure general scientific knowledge as well as ones specific to genetically modified foods. The students were offered the opportunity to participate in the study in return for credit as part of an introductory psychology course. Participation in research is encouraged (but not required) so that students understand the processes of research that they are studying in the course.

All in all, over 75% of the students had a favorable or somewhat favorable attitude towards GMFs. Compared to other studies, the Nebraska university respondents generally knew a little more about GM matters (e.g., over 80% of the Nebraska students knew whether "more than half of human genes are identical to those of chimpanzees" whereas about half the respondents in other studies knew the correct answer; over 90% of the Nebraska students knew whether "by eating a genetically modified fruit a person's genes could become modified," which is markedly more than what was found in most other studies conducted in the same time period). We found that those students who answered more questions correctly about genetic modification were markedly more likely to indicate they believed GMFs did not raise safety issues. The more knowledgeable students also tended to

indicate that the potential benefits of GMFs outweighed the potential risks; however, nearly 2/3 of the college students felt that they did not have enough information or did not know enough or care enough to have an opinion about whether the benefits of GMFs outweighed the risks (or vice versa).

Thus, the college students were supportive of GMFs, on the whole. The more knowledgeable a student was, the more likely s/he would indicate GMFs were safe. But most people thought they did not have sufficient information to weigh the costs versus benefits for GMFs as a general matter.

Discussion

The two inquiries, then, converge on the finding that Nebraskans (at least the respondents we engaged) have a more positive attitude toward genetically modified foods than respondents from other studies have. They also are knowledgeable: Nebraska respondents in both studies scored higher on tests of knowledge than have respondents in other studies.

These findings do not mean that Nebraskans know all that they should about genetically modified foods. Our research did not cover – nor did it intend to cover – the entire array matters that might go into a policy weighting of the risks versus benefits of GMFs. But the two inquires strongly suggest that it makes a difference whether research focuses on attitudes and beliefs of respondents in a context in which GMFs are regularly used and encountered as opposed to other contexts. That understanding may help researchers better assess an important part of the context in which GMF policy decisions will be made in the US.

It will be useful to further examine our data to tease out the link between knowledge and attitudes. Our data are intriguing, but not at all definitive. We have no idea the extent to which our findings generalize to other parts of Nebraska, much less the rest of the farm belt.

Of course, then, it will be instructive to replicate our work elsewhere in the farm belt. There will be greater confidence if an independent group of residents is invited to consider the issues and comes up with the same findings. Replication is key, and we have not replicated either of our inquiries.

References

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