

'BIG - PIE' Survey

Background -

We designed our survey in accordance with the guidelines proposed by iGEM HQ. Hence, informed consent and privacy/data protection were highly important to us and we got them approved by a professor working in the field of surveys from the Department of Economic Sciences at our institute. Also, our survey design had to be specific and unambiguous, with the goal of not compromising our survey by insinuating a "correct" response to any question. The participants volunteered to conduct our survey. Our survey was an anonymous survey and also any personal data like email id, name, location, etc. was not recorded. However, our survey was designed to help us improve our project and give insight on the public perception towards new therapies and Synthetic Biology.

The survey was published on the iGEM collaboration page, social media diabetes forums, our institution, etc.

Overview -

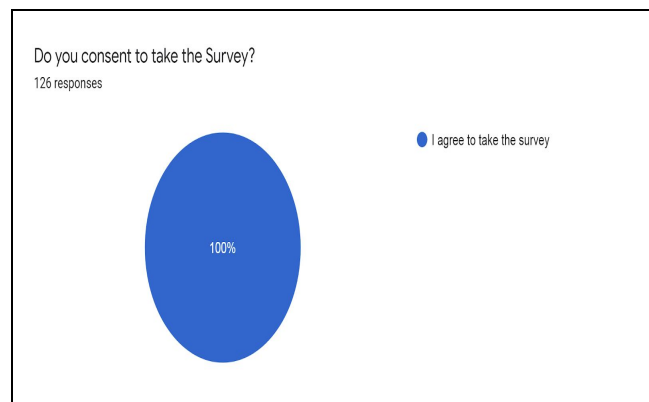
The survey covered a number of topics including prevalence and awareness about diabetes, application of our therapeutic drug in the real world, knowledge and perception about Genetically Modified Organisms (GMOs).

Overall, 126 people participated in our survey from different parts of the globe.

Informed Consent -

1. The survey is an opportunity to help conduct research on alternate diabetes therapies.
2. The survey will collect insights on diabetes therapies and opinions on current treatments.
2. The responses to the survey are completely anonymous and do not record any personal data like email id, name, location, etc.
3. The survey is completely voluntary and the respondent can terminate the survey at any point.
4. The survey will take 10-15 minutes.

5. If you would like to know more about our project, please click on the link below - <https://drive.google.com/file/d/1IXpitOwVKdFYsNRELdkM-EhqR942ykbT/view?usp=sharing>
For more details - Email us at igemiiserb@gmail.com

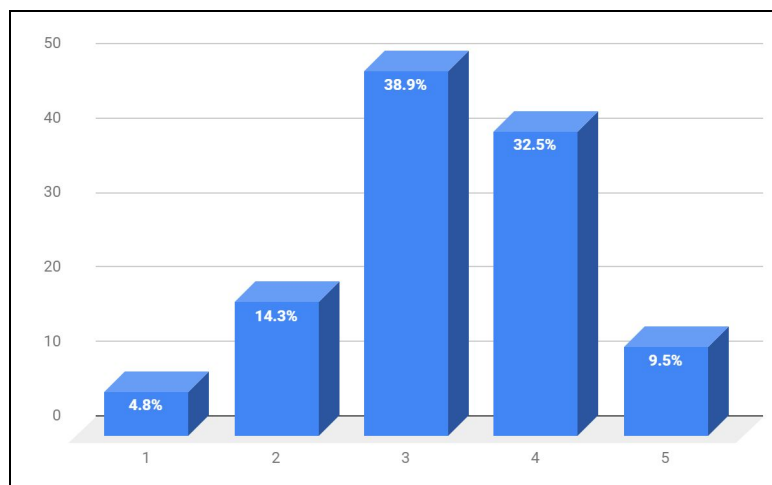


RESULTS -

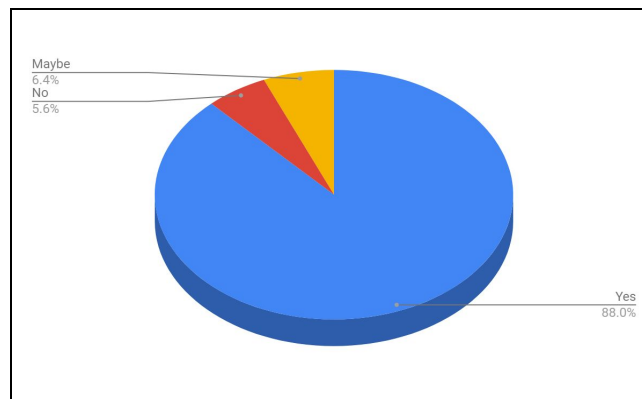
Section 1 - Awareness about Diabetes

First, we wanted to assess the population's general knowledge about Diabetes. Thus, we established several questions to learn more about their level of information. It was quite good to see that 80% of them knew about different types of diabetes. When asked about current treatments for diabetes, more than 80% were aware about insulin injections, tablets, diet & exercise. Few of them added discrete treatments like inhalable insulin, yoga, organic food, ayurved, etc. About 92% of people were in favour of Genetics as a cause of diabetes, obesity and diet being the next. Then we wanted to search out the problems faced by diabetic patients. We received 20 different problems in addition to most prevalent ones associated with diabetes, susceptibility to diseases and kidney failure being the most. Other responses include vision issues, arthritis, urge to urinate, tiredness, etc.

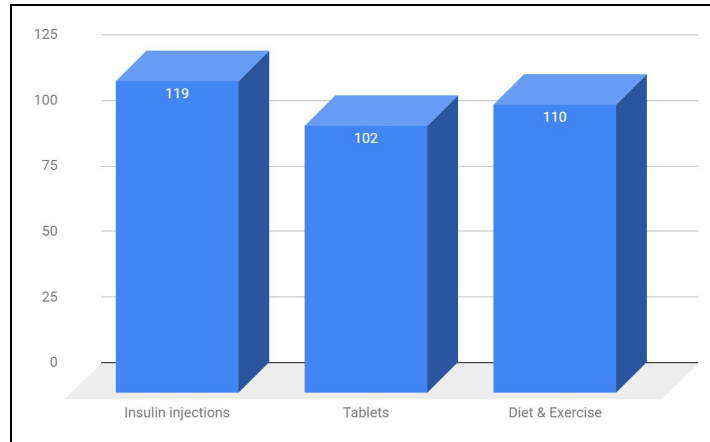
Rate your understanding of Diabetes.



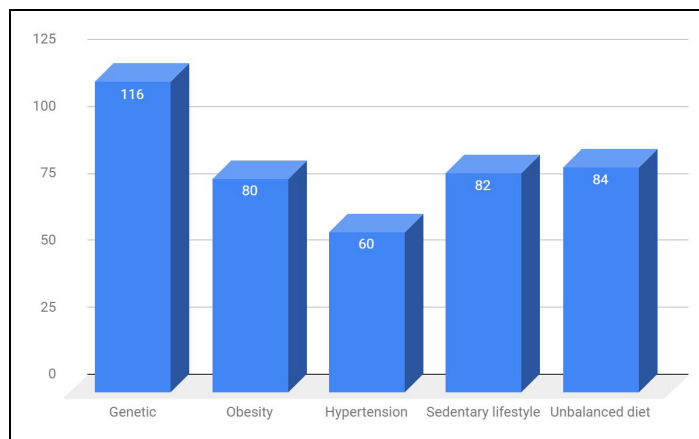
Have you heard of Diabetes and its different types (Type 1 and Type 2)?



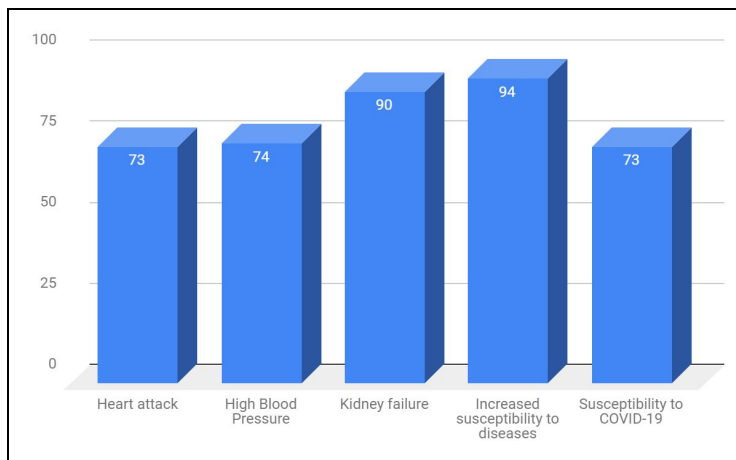
What treatments are you aware of that are available for diabetes currently?



What factors do you believe to be the causes of Diabetes?



What are the problems faced by diabetes patients?

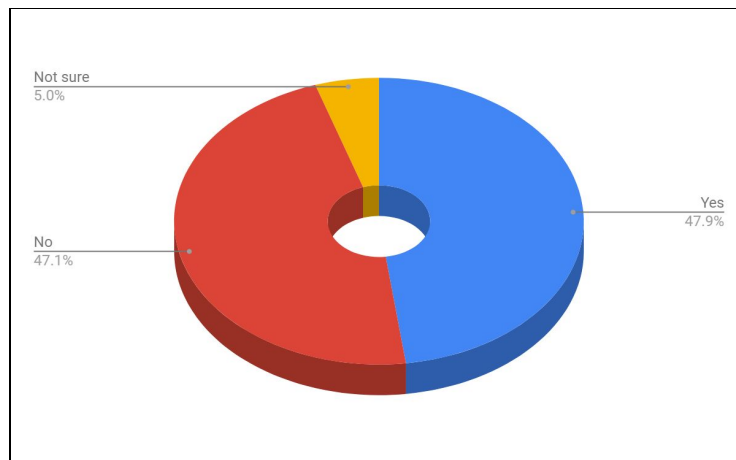


Section 2 - Diabetes

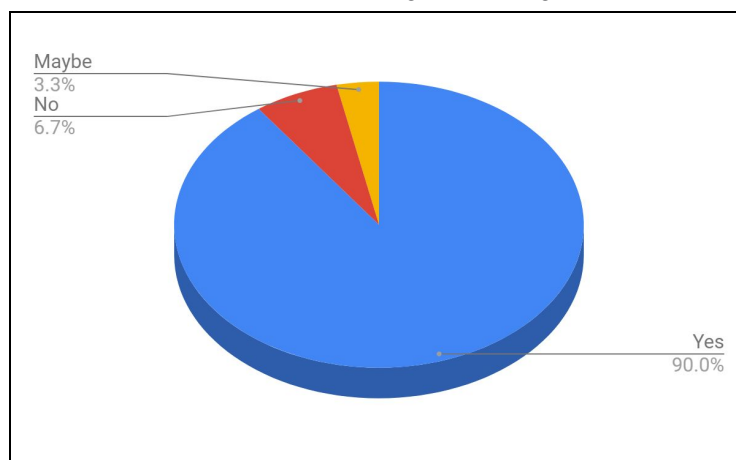
We designed this section to assess the prevalence of diabetes, in and around the social circle of respondents and satisfaction & problems associated with current treatments for diabetes especially insulin injections.

About 90% of people were affirmative about people suffering from diabetes in their social circles. This shows the prevalence of diabetes in our society. Only 30% of patients inject insulin shots with 2 injections per day being the most.

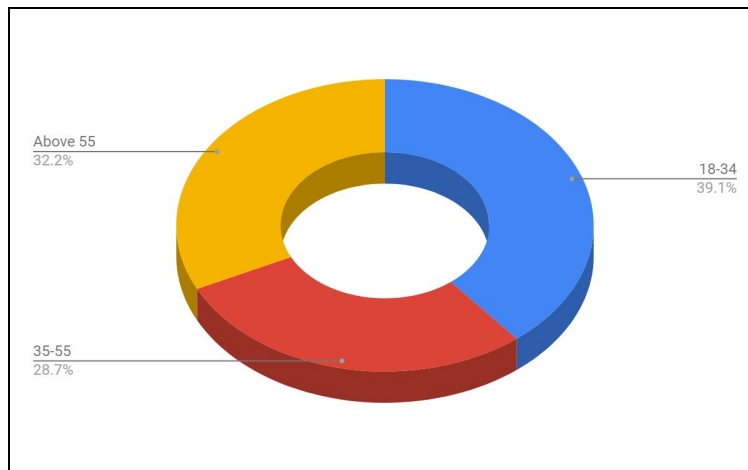
Do you have diabetes?



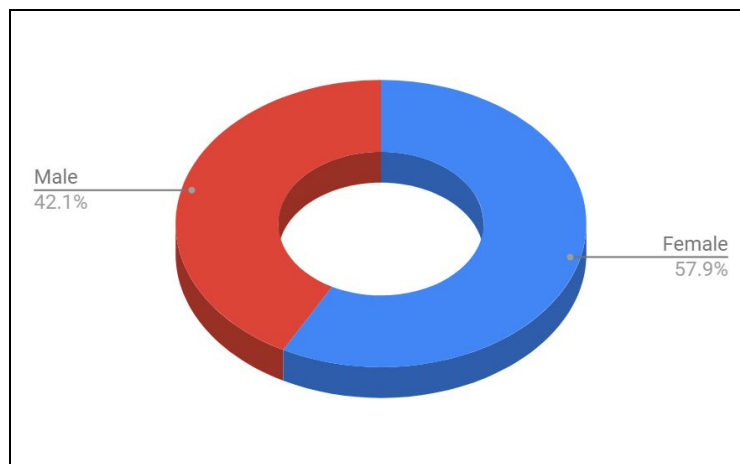
Do you know people who suffer from diabetes in your family or immediate social circle?



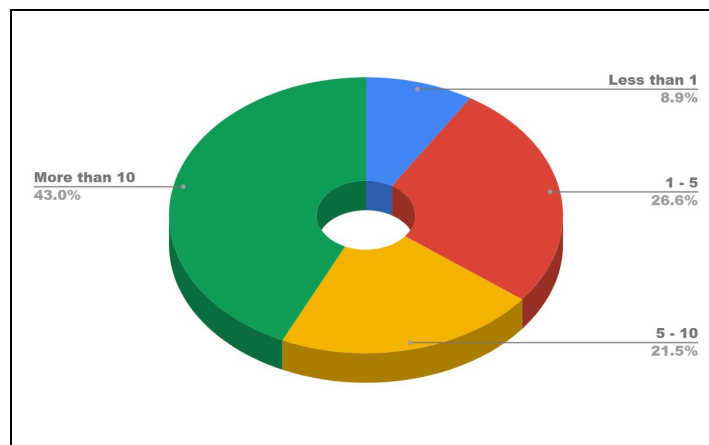
The age group of the patient



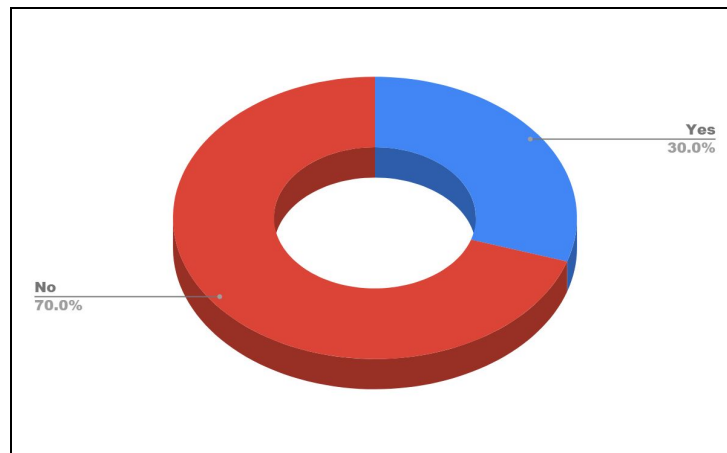
Gender of Diabetes patient



How many years has the patient taken treatment?



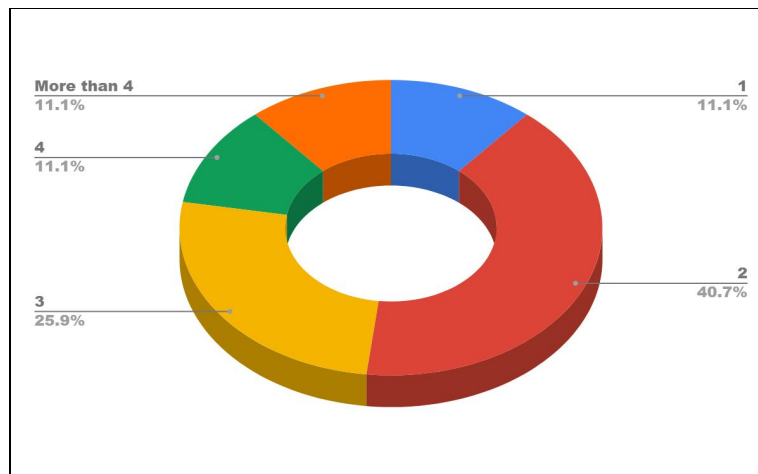
Does the patient use insulin injections?



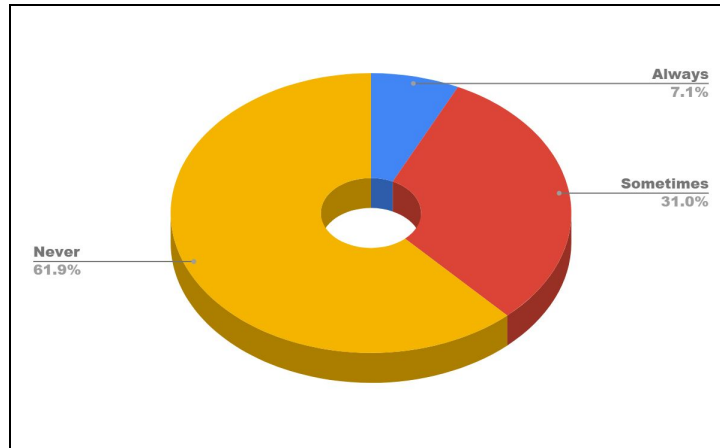
It was good to see that 62% of patients don't re-use injections but the rest (re-use sometimes-31%) and (re-use always-7.1%) is a point of concern.

How many times does the diabetes patient get administered insulin injections in a day?

Over 51% of the patients were taking insulin shots at least 3 times a day.

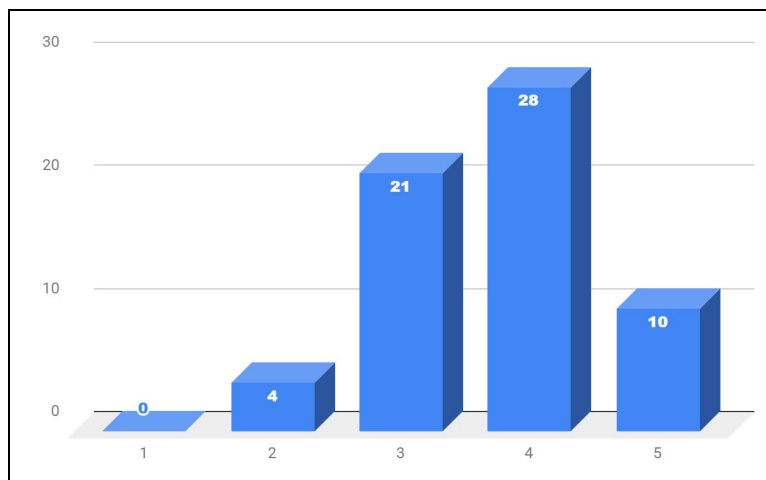


Are you (diabetes patient) comfortable using disposable insulin injections more than once?



44% rated themselves at 4 on scale of 5 for being satisfied with current treatments but 15 patients wrote their serious concerns with the current treatment.

Rate your (diabetes patient) satisfaction with your current treatment.



Please share any concerns or issues you face with your current treatment.

- My father had Diabetes for over 15 years afaik and later had brain stroke, heart failure, urethra stricture and many other issues. Diabetes was the main culprit along with many other lifestyle choices. Till the end administration of insulin injections or tablets to maintain right blood sugar levels was a difficult task even with a strict diet control.
- Helps with symptoms. Not a natural solution.
- High cost , unpredictability of sugars staying in range.
- Troublesome, not a permanent solution.
- Economical issues.
- The medication over prolonged time has caused kidney stones, more than once.

- Although it is a nearly 25-year old case history now, blood sugar levels are nearly flat & stable, almost going below the levels that indicate diabetes. However, lack of awareness or incomplete treatment in the initial years has today led to heart, kidney, eye, gastrointestinal and several such issues. It has even affected the legs as wounds do not get cured easily and so on.
- Side effects of medicine

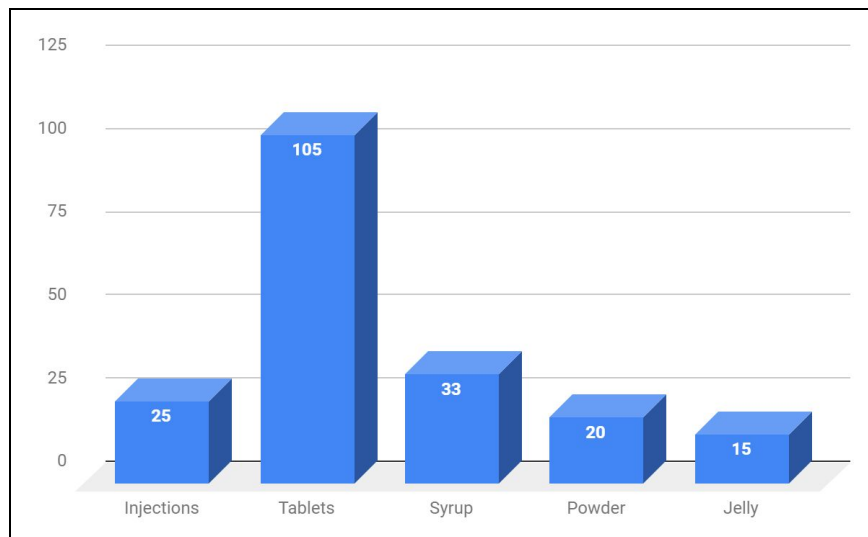
This inspired us to work hard towards our goal to provide cheap, non-invasive treatment for diabetes.....!!!!

Section 3 - Therapeutic Drug and GMOs

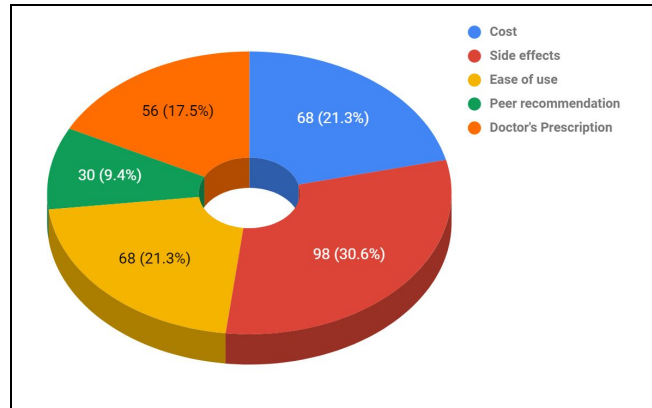
First, we wanted to know about the preferred form of drug administration and the 'tablet' was preferred by most of the people. And also people were found to be more concerned about side effects of the drug to be administered.

This inspired us to design mucopenetrative drug delivery system in the form of tablet (See [implementation](#)) and a kill switch to ensure safety of users ([Link](#)).

What is your preferred form of drug administration?



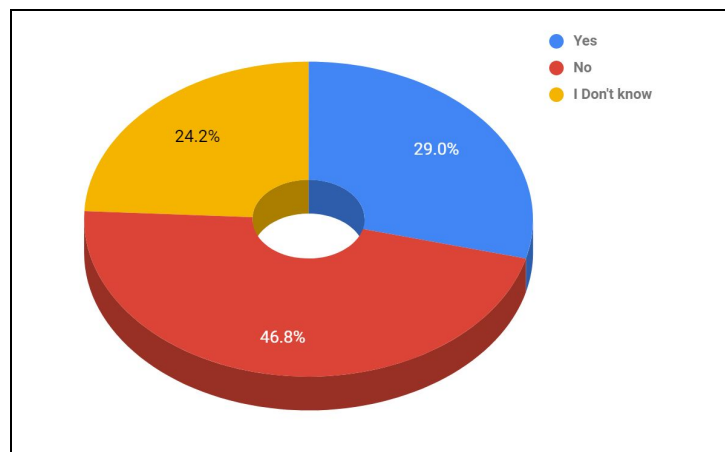
What factors do you take into consideration while choosing medicine?



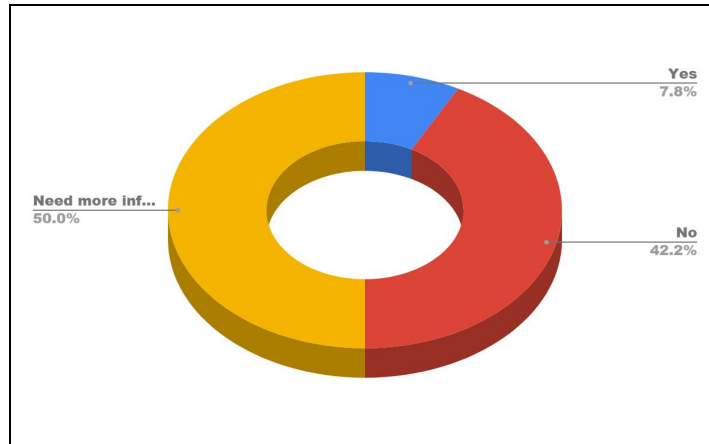
Next, we wanted to assess the views on GMOs and acceptance of a living therapeutic. Thus, we designed a few questions to understand more about their stance on living therapeutic (engineered bacterial drug used as medical treatments). People wished to gain more knowledge about our novel treatment. About 33% people rated 'lab modified products/drugs' at 3 on a scale of 5.

From these responses, we could deduce that there is still a lack of education and knowledge when it comes to GMOs. The responses inspired us to launch Science communication webinars aimed at high school students, to educate them about Synthetic biology (See [Link](#)) and also to design Indian GMO policy handbook (See [Link](#)).

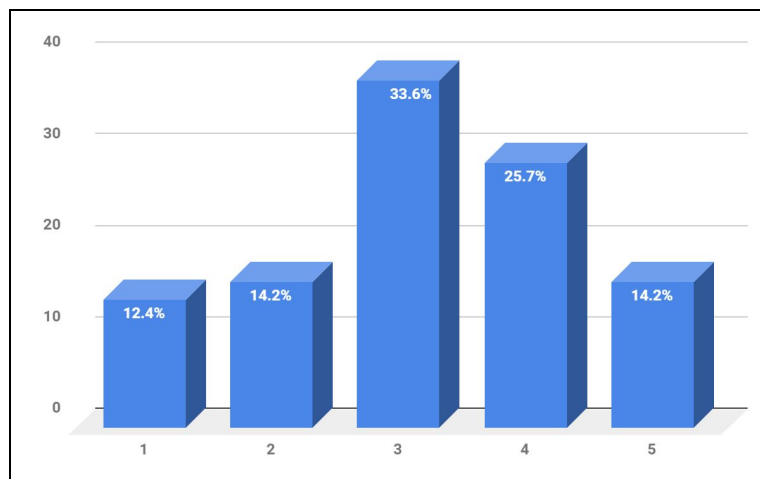
Have you used "lab modified" products? (eg: seedless watermelon!)



Will you be willing to use or recommend our product: a tablet containing safe lab modified bacteria to control blood sugar levels as an alternative to insulin injections?



How comfortable are you in using 'lab modified' products?



How comfortable are you in using drugs that contain lab modified bacteria?

