



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Mental Health In The Digital Age: Can AI Detect & Support Emotional Well-Bringing

¹ Abhinav Dinesan Nambiar, ² Asst. Prof. Gauri Ansurkar

¹Masters Student, ²Assistant Professor

¹Information Technology,

¹Keraleeya Samajam's Model College, Khambalpada Road, Thakurli, Dombivali (East), Kanchangaon, Maharashtra
Dombivali, India

Abstract: In today's world, people spend a lot of time online using phones, social media, and other digital platforms. While these tools can help us connect, they can also harm mental health by causing stress, loneliness, or anxiety. Many people who need mental health support do not get it due to stigma, high costs, or lack of access to professionals.

Artificial Intelligence (AI) could help by detecting emotions through online activity, messages, or speech and by offering quick support. But there are concerns about how accurate AI really is, whether it can be trusted, and how it might affect privacy. This raises an important question: Can AI be used safely and effectively to support people's emotional well-being in the digital age?

Index Terms - Artificial Intelligence, Mental Health, Emotional Well-being, Digital Mental Health, AI Therapy, Mental Health Apps, Emotional AI, AI and Privacy, Online Therapy, Future of Mental Health

I. INTRODUCTION

Technology has become a part of almost everything we do today. People use phones, apps, and social media every day to talk, learn, and share. While this has made life easier, it has also created new challenges for mental health. Many people feel stressed, anxious, or lonely because of spending too much time online, and not everyone gets the help they need.

Artificial Intelligence (AI) is now being looked at as a way to support mental health in the digital age. AI tools can study patterns in speech, text, or online behaviour to guess how a person is feeling. These tools could give quick support or guide people toward professional help. However, there are still big questions about how much we can trust AI, whether it is accurate, and how safe it is for personal privacy.

II. TECHNICAL ARCHITECTURE COMAPARISON

This section compares how different AI tools are used in mental health, such as chatbots, emotion-tracking apps, and online therapy platforms. The focus is on their purpose and effectiveness, not on how they are built.

III. METHODOLOGY

A. RESEARCH DESIGN

The study is designed to explore how AI can support mental health and what users think about these tools.

It aims to find both benefits and risks, giving a balanced understanding. It aims to find both benefits and risks, giving a balanced understanding.

B. RESEARCH APPROACH

A mixed approach is followed, using surveys, user feedback, and secondary data from existing studies.

This helps combine real user views with already available knowledge.

C. DATA COLLECTION METHODS

Information is collected through online surveys, interviews, and reviews of AI mental health apps and reports. This ensures data comes from both personal experiences and trusted sources.

D. SAMPLING STRATEGY

The sample includes people from different age groups and digital usage patterns to get diverse opinions.

This variety helps in comparing how different users respond to AI tools.

E. DATA ANALYSIS TECHNIQUES

Collected data is analyzed by identifying common themes, measuring satisfaction levels, and comparing user perceptions. Both numbers and user opinions are used to get clear results. Additionally, patterns in user concerns and preferences are studied to suggest improvements in AI mental health tools.^[1]

F. TOOLS USED

Basic survey forms, spreadsheets, and simple statistical tools are used to organize and study the data.

These tools make the research process easy, clear, and understandable. Graphs, charts, and summary tables are also created to visualize trends and highlight key findings.

G. ETHICAL CONSIDERATIONS

All data is collected with consent, and user privacy is respected. Sensitive details are kept safe and anonymous.

Care is taken to ensure that no user feels pressured or exposed. Participants are informed about the purpose of the study, and they have the right to withdraw at any time without consequences.^[4]

H. LIMITATIONS

The research may not cover all AI tools and is limited by the number of participants and available resources.

It also depends on honest responses, which may sometimes vary. Other limitations include differences in digital literacy among participants and the fast-evolving nature of AI technology, which may affect generalizability.

IV. PERFORMANCE METRICS

Metric	Traditional Support	AI-based Mental Health Tools
Response Time	Hours to days (appointments, waiting lines)	Instant (chatbots, apps)
Accuracy	High (human empathy, clinical expertise)	Variable; depends on algorithm and training data
Scalability	Limited by number of professionals	Millions of users at once
Cost	High (session fees, limited insurance)	Low or free (app-based models)
Personalization	Strong human touch	Improving but limited by AI bias
Availability	Restricted by geography and schedules	24/7 global access

V. USER EXPERIENCE AND THEIR ECOSYSTEM INTEGRATION

AI-based tools are easy to access through apps, social media, or chatbots, making them highly available to digital users. However, many people still trust human therapists more due to empathy and personal interaction. Integration into daily routines (like fitness apps or social platforms) increases adoption, but stigma and lack of awareness reduce long-term engagement.^[5]

VI. SECURITY AND PRIVACY

Traditional therapy offers face-to-face confidentiality, while AI tools depend on digital platforms. User data such as emotions, messages, and behaviour patterns are highly sensitive. Privacy concerns, risk of misuse, and unclear ownership of data raise trust issues. Strong encryption, anonymization, and transparent policies are essential to make AI-based tools secure.^[2]

VII. REGULATORY & TECHNICAL BOTTLENECKS

Mental health professionals work under strict regulations, but AI tools lack clear global standards. Differences in medical rules across countries make approvals difficult. Technical barriers like biased training data, inaccurate emotion recognition, and lack of human empathy limit adoption. Without clear guidelines, both users and healthcare providers hesitate to fully trust AI tools.^[3]

VIII. TARGET AUDIENCE

- i. College Students & Young Professionals – They are heavy users of digital platforms & AI apps (chatbots, wellness apps, etc.), and their mental health is often influenced by technology.
- ii. Mental Health Professionals – Psychologists, counsellors, therapists who may adopt AI as support tools.
- iii. Technology Users in General (18–45 years) – People who use AI chatbots, mental health apps, or social media platforms.
- iv. Researchers & Educators – Interested in the intersection of psychology, technology, and AI.
- v. Policy Makers & Health Tech Startups – For framing ethical, social, and policy

IX. QUESTIONNAIRE DESIGN FOR THE USER PERCEPTION ANALYSIS

To complement the comparison between human-based and AI-based support, a user perception study is designed using a questionnaire. The goal is to assess awareness, trust, usability, and privacy concerns among digital users.

Sample focus areas:

- i. Awareness of AI mental health apps
- ii. Comfort level in using AI for emotional support
- iii. Trust compared to human professionals
- iv. Privacy and data security concerns
- v. Willingness to adopt AI tools in future

X. SURVEY QUESTIONS

- i. What is your name?
- ii. What is your age group?
- iii. What is your gender?
- iv. What is your current occupation?
- v. Have you ever used AI-based tools/apps (like chatbots, meditation apps, or emotional
- vi. If yes, which ones have you used?
- vii. How often do you use digital platforms (social media, apps, AI chatbots) for emotional
- viii. Do you believe AI can understand human emotions?
- ix. How comfortable are you in sharing personal feelings with an AI chatbot?
- x. Do you think AI can provide initial support for stress, anxiety, or loneliness?
- xi. What do you feel is the biggest risk of using AI for mental health?
- xii. Would you trust AI as a first step before meeting a human therapist?

- xiii. What improvements would you like to see in AI mental health tools?
- xiv. Do you think AI should be used only as support or could it replace human counsellors in some cases?

XI. RESULTS

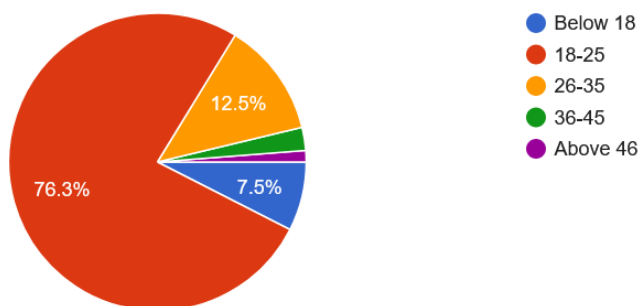


Fig. 1. When asked about their Age Group

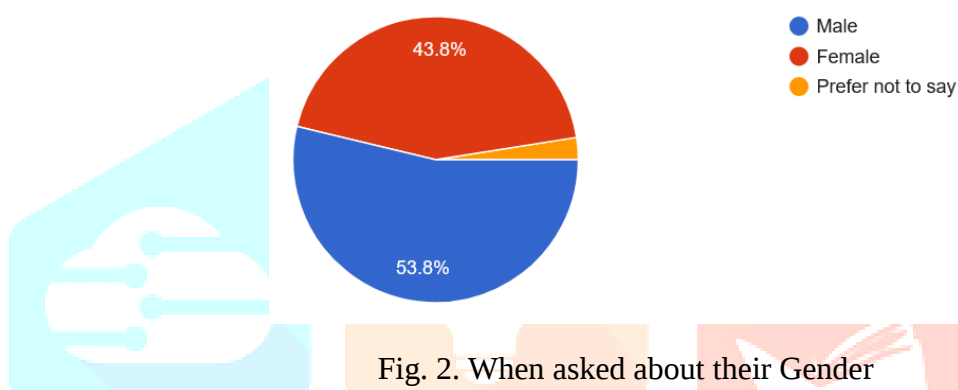


Fig. 2. When asked about their Gender

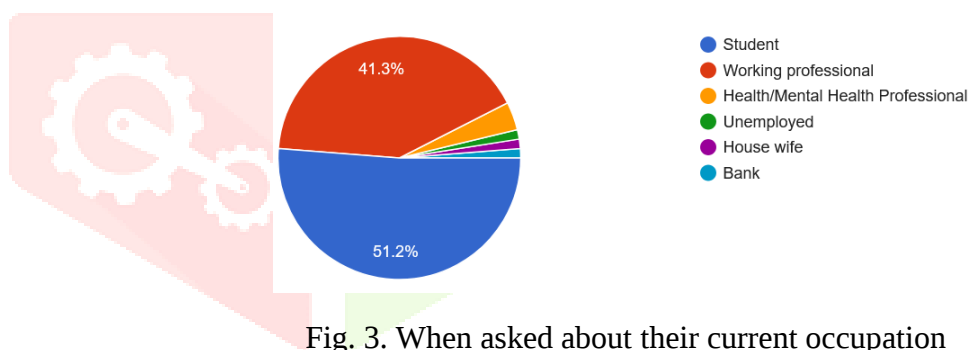


Fig. 3. When asked about their current occupation

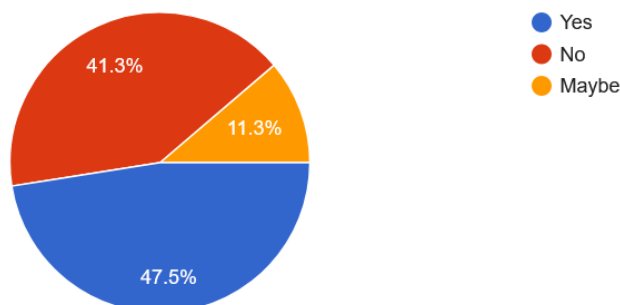


Fig. 4. When asked about if they have ever used AI-based tools/apps

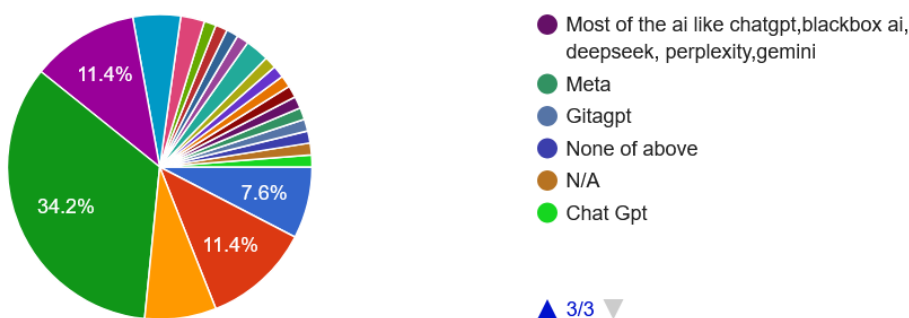
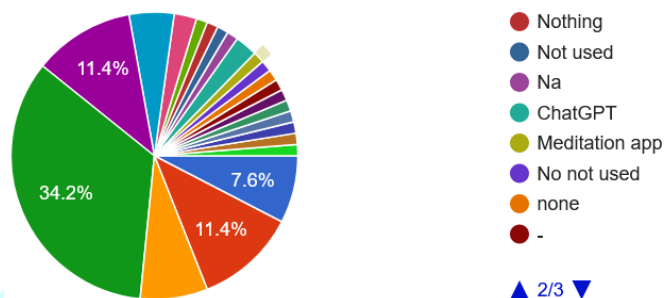
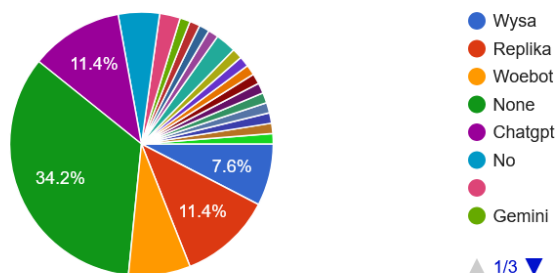


Fig. 5. When asked about the AI tools they had used used for sharing their emotions and discuss their issues

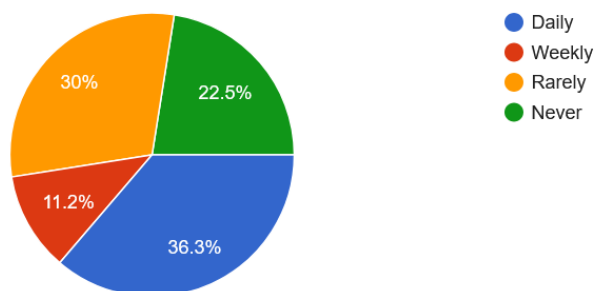


Fig. 6. When asked about how often they use the digital platforms

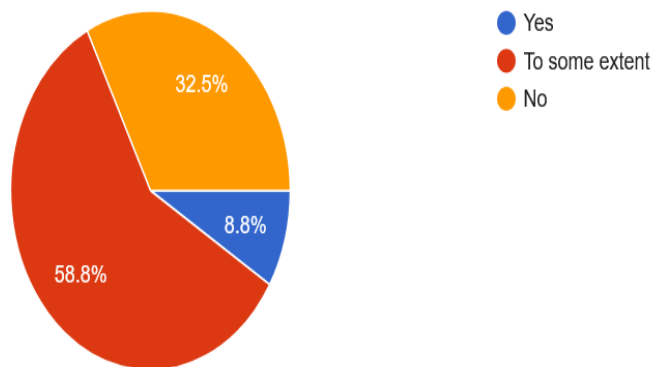


Fig. 7. When asked about if AI can understand human emotions

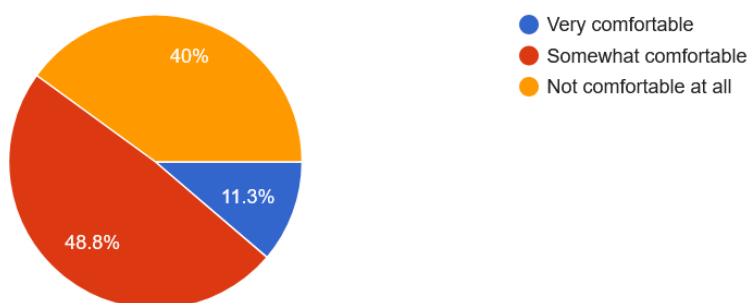


Fig. 8. When asked about how comfortable they are in sharing personal feelings with an AI chatbot

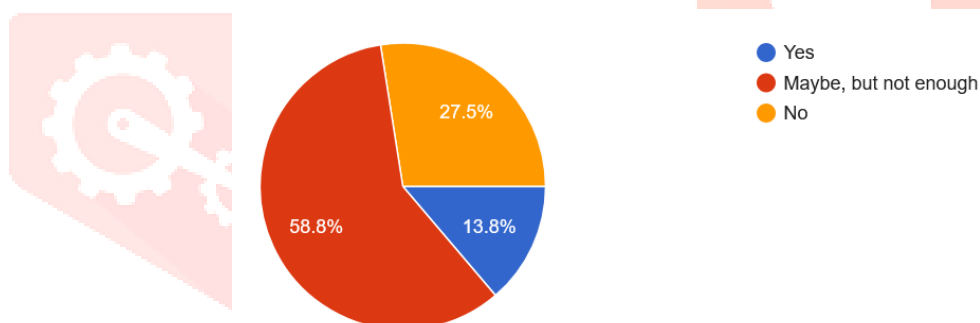


Fig. 9. When asked about can AI provide initial support for stress, anxiety or loneliness.

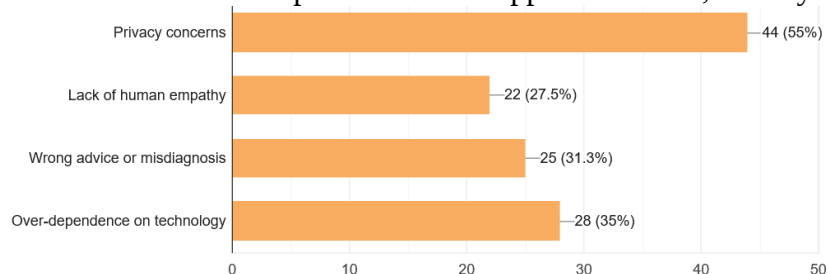


Fig. 10. When asked about what they feel is the biggest risk of using AI for mental health

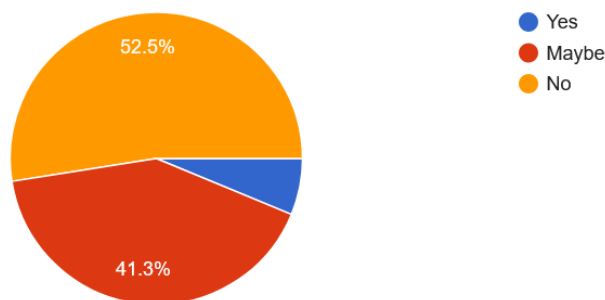


Fig. 11. When asked about whether they trust AI as a first step before meeting a human therapist

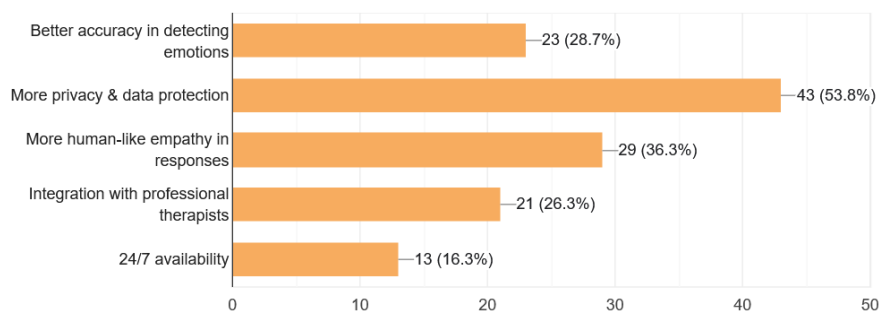


Fig. 12. When asked about the improvements they would like to see in AI mental health tools

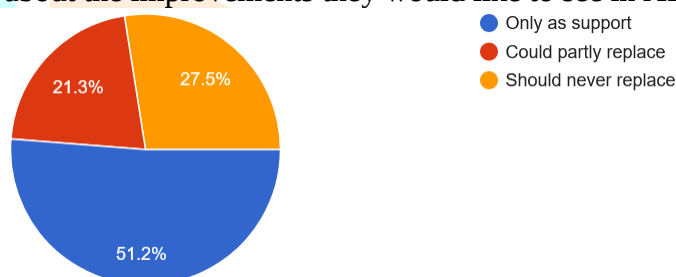


Fig. 13. When asked about if they think AI should be used only as support or could it replace human counselors in some cases

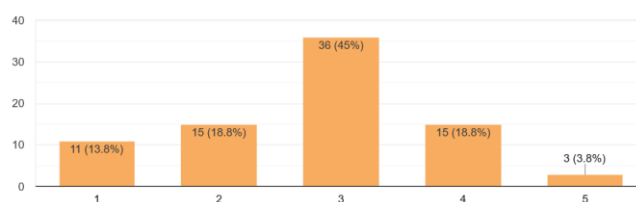


Fig. 14. When asked about how accurate do you think AI tools are in detecting emotions like stress, anxiety, or depression

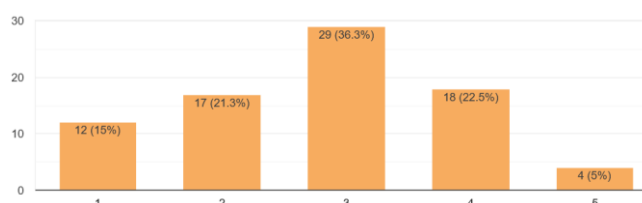


Fig. 15. When asked about how helpful do they find AI support compared to human support

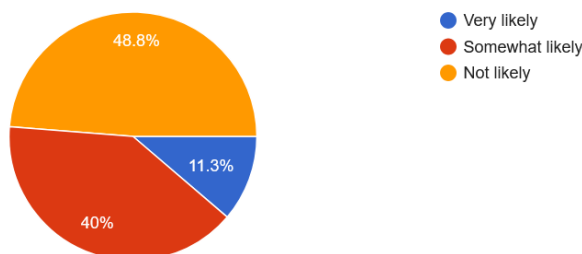


Fig. 16. When asked about If you faced a serious emotional issue, how likely are you to first try an AI-based tool before contacting a human counselor

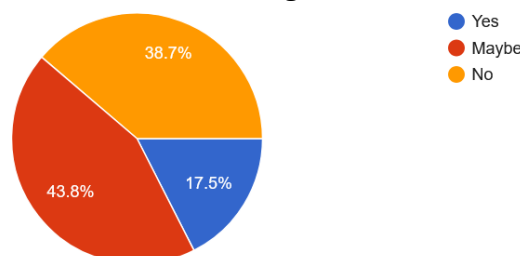


Fig. 17. When asked about would they recommend AI-based emotional support tools to friends or family

XII. SIGNIFICANT OUTCOMES

1. When people were asked about the AI tools they have used till date

Most respondents reported using popular AI chatbots and mental health apps like ChatGPT, Replika, Woebot, Wysa, and meditation apps. ChatGPT was the most frequently mentioned platform, while many users stated they had not used any AI tools at all.

2. When they were asked Do you believe AI can understand human emotions

A majority of respondents believed that AI can only understand human emotions “to some extent,” with very few expressing complete trust in AI’s emotional understanding abilities. Some still believe that AI cannot truly understand human emotions.

3. When they were asked about what do they feel is the biggest risk of using AI for mental health?

The perceived risks were dominated by concerns about privacy, lack of human empathy, over-dependence on technology, and the potential for wrong advice or misdiagnosis. Privacy concerns were the most common risk cited.

4. When they were asked What improvements would you like to see in AI mental health tools

Respondents most commonly requested improvements in privacy protections, better accuracy in detecting emotions, more human-like empathy in responses, and integration with professional therapists. Privacy enhancements topped the list of desired upgrades.

5. When they were asked On a scale of 1–5, how accurate do you think AI tools are in detecting emotions like stress, anxiety, or depression?

Most participants rated AI accuracy at “3” (moderately accurate), with few giving extreme ratings of “1” or “5.” This indicates cautious optimism, but not full confidence, in AI’s diagnostic accuracy.

6. When they were asked On a scale of 1–5, how helpful do you find AI support compared to human support

Helpfulness ratings were also centered around the mid-scale value of “3,” suggesting users find AI moderately helpful but not a replacement for human support. Very few rated AI support at the highest (“5”) level compared to humans.

XIII. HYPOTHESIS TESTING

A hypothesis test was conducted to determine if there is a statistically significant association between perceived accuracy of AI tools (for detecting emotions) and perceived helpfulness of AI support compared to human support.

A) NULL HYPOTHESIS (H₀)

There is no association between respondents’ ratings of AI accuracy and helpfulness; the distributions are independent.

B) ALTERNATE HYPOTHESIS (H1)

There is an association; the distributions are not independent.

1. STATISTICAL TEST

There are many tests available to determine if the null hypothesis is to be rejected or not. Some are:

1. Chi-squared test
2. T-student test (T-test)
3. Fisher's Z test.

For this paper, we will be using Chi-Squared Test Pearson's chi-square test is a statistical test for categorical data. It is used to determine whether your data are significantly different from what you expected. (Also

1	1.65	2.34	3.99	2.48	0.55
2	2.25	3.19	5.44	3.38	0.75
3	5.40	7.65	13.05	8.10	1.80
4	2.25	3.19	5.44	3.38	0.75
5	0.45	0.64	1.09	0.68	0.15

known as alpha or α). A significance level of 0.05, for example, means there's a 5% probability of discovering a difference when there isn't one. Lower significance levels indicate that more evidence is required to reject the null hypothesis. The confidence level indicates the probability that the location of a statistical parameter (such as the arithmetic mean) measured in a sample survey is given below.

Accuracy Helpfulness	1	2	3	4	5	Row Totals
1	6	3	2	0	0	11
2	2	9	3	1	0	15
3	3	4	22	6	1	36
4	1	1	2	11	0	15
5	0	0	0	0	3	3
Column Totals	12	17	29	18	4	80

Let's walk through the chi-squared test applied to our data for **AI accuracy ratings** vs **AI helpfulness ratings**, closely following your four requested steps and using the actual Excel values.

STEP 1: State the Hypothesis

- **Null Hypothesis (H_0):** Ratings of AI accuracy and ratings of helpfulness are independent—there is no association between them.
- **Alternative Hypothesis (H_1):** Ratings of AI accuracy and ratings of helpfulness are not independent—there is an association between them.

STEP 2: Find the Test Statistic – Calculating E_i (Expected Frequencies)**Total responses (N): 80****Now, calculate expected frequency**

$$E_{ij} = (\text{Row Total}_i \times \text{Column Total}_j) / N$$

Example calculations:

- For (Accuracy 1, Helpfulness 1):

$$E_{11} = (11 \times 12) / 80 = 1.65$$

- For (Accuracy 3, Helpfulness 3):

$$E_{33} = (36 \times 29) / 80 = 13.05$$

Full expected frequencies for all cells (rounded to 2 decimals):**STEP 3: Calculating $\sum (O_i - E_i)^2 / E_i$**

Cell (Accuracy=1, Helpfulness=1):

Observed (O) = 6, Expected (E) = 1.65

$$= (O - E)^2 / E$$

$$= (6 - 1.65)^2 / 1.65$$

$$= 18.92 / 1.65$$

$$= 11.47$$

Cell (Accuracy=1, Helpfulness=2):

O = 3, E = 2.34

$$= (O - E)^2 / E$$

$$= (3 - 2.34)^2 / 2.34$$

$$= 0.44 / 2.34$$

$$= 0.19$$

Cell (Accuracy=1, Helpfulness=3):

O = 2, E = 3.99

$$= (O - E)^2 / E$$

$$= (2 - 3.99)^2 / 3.99$$

$$= 3.96 / 3.99$$

$$= 0.99$$

Cell (Accuracy=1, Helpfulness=4):

O = 0, E = 2.48

$$= (O - E)^2 / E$$

$$= (0 - 2.48)^2 / 2.48$$

$$= 6.15 / 2.48$$

$$= 2.48$$

Cell (Accuracy=1, Helpfulness=5):

O = 0, E = 0.55

$$= (O - E)^2 / E$$

$$= (0 - 0.55)^2 / 0.55$$

$$= 0.30 / 0.55$$

$$= 0.55$$

Cell (Accuracy=2, Helpfulness=1):

O = 2, E = 2.25

$$= (O - E)^2 / E$$

$$= (2 - 2.25)^2 / 2.25$$

$$= 0.06 / 2.25$$

$$= 0.03$$

Cell (Accuracy=2, Helpfulness=2):

O = 9, E = 3.19

$$= (O - E)^2 / E$$

$$= (9 - 3.19)^2 / 3.19$$

$$= 33.82 / 3.19$$

$$= 10.60$$

Cell (Accuracy=2, Helpfulness=3):

O = 3, E = 5.44

$$=(O-E)^2/E$$

$$=(3-5.44)^2/5.44$$

$$=5.95/5.44$$

$$=1.09$$

Cell (Accuracy=2, Helpfulness=4):

O = 1, E = 3.38

$$=(O-E)^2/E$$

$$=(1-3.38)^2/3.38$$

$$=5.67/3.38$$

$$=1.68$$

Cell (Accuracy=2, Helpfulness=5):

O = 0, E = 0.75

$$=(O-E)^2/E$$

$$=(0-0.75)^2/0.75$$

$$=0.56/0.75$$

$$=0.75$$

Cell (Accuracy=3, Helpfulness=1):

O = 3, E = 5.40

$$=(O-E)^2/E$$

$$=(3-5.40)^2/5.40$$

$$=5.76/5.40$$

$$=1.07$$

Cell (Accuracy=3, Helpfulness=2):

O = 4, E = 7.65

$$=(O-E)^2/E$$

$$=(4-7.65)^2/7.65$$

$$=13.32/7.65$$

$$=1.74$$

Cell (Accuracy=3, Helpfulness=3):

O = 22, E = 13.05

$$=(O-E)^2/E$$

$$=(22-13.05)^2/13.05$$

$$=80.10/13.05$$

$$=6.14$$

Cell (Accuracy=3, Helpfulness=4):

O = 6, E = 8.10

$$=(O-E)^2/E$$

$$=(6-8.10)^2/8.10$$

$$=4.41/8.10$$

$$=0.54$$

Cell (Accuracy=3, Helpfulness=5):

O = 1, E = 1.80

$$=(O-E)^2/E$$

$$=(1-1.80)^2/1.80$$

$$=0.64/1.80$$

$$=0.36$$

Cell (Accuracy=4, Helpfulness=1):

O = 1, E = 2.25

$$=(O-E)^2/E$$

$$=(1-2.25)^2/2.25$$

$$=1.56/2.25$$

$$=0.69$$

Cell (Accuracy=4, Helpfulness=2):

O = 1, E = 3.19

$$\begin{aligned}
 &= (O-E)^2/E \\
 &= (1-3.19)^2/3.19 \\
 &= 4.80/3.19 \\
 &= 1.5
 \end{aligned}$$

Cell (Accuracy=4, Helpfulness=3):

$$\begin{aligned}
 O &= 2, E = 5.44 \\
 &= (O-E)^2/E \\
 &= (2-5.44)^2/5.44 \\
 &= 11.83/5.44 \\
 &= 2.18
 \end{aligned}$$

Cell (Accuracy=4, Helpfulness=4):

$$\begin{aligned}
 O &= 11, E = 3.38 \\
 &= (O-E)^2/E \\
 &= (11-3.38)^2/3.38 \\
 &= 58.08/3.38 \\
 &= 17.19
 \end{aligned}$$

Cell (Accuracy=4, Helpfulness=5):

$$\begin{aligned}
 O &= 0, E = 0.75 \\
 &= (O-E)^2/E \\
 &= (0-0.75)^2/0.75 \\
 &= 0.56/0.75 \\
 &= 0.75
 \end{aligned}$$

Cell (Accuracy=5, Helpfulness=1):

$$\begin{aligned}
 O &= 0, E = 0.45 \\
 &= (O-E)^2/E \\
 &= (0-0.45)^2/0.45 \\
 &= 0.20/0.45 \\
 &= 0.44
 \end{aligned}$$

Cell (Accuracy=5, Helpfulness=2):

$$\begin{aligned}
 O &= 0, E = 0.64 \\
 &= (O-E)^2/E \\
 &= (0-0.64)^2/0.64 \\
 &= 0.41/0.64 \\
 &= 0.64
 \end{aligned}$$

Cell (Accuracy=5, Helpfulness=3):

$$\begin{aligned}
 O &= 0, E = 1.09 \\
 &= (O-E)^2/E \\
 &= (0-1.09)^2/1.09 \\
 &= 1.19/1.09 \\
 &= 1.09
 \end{aligned}$$

Cell (Accuracy=5, Helpfulness=4):

$$\begin{aligned}
 O &= 0, E = 0.68 \\
 &= (O-E)^2/E \\
 &= (0-0.68)^2/0.68 \\
 &= 0.46/0.68 \\
 &= 0.68
 \end{aligned}$$

Cell (Accuracy=5, Helpfulness=5):

$$\begin{aligned}
 O &= 3, E = 0.15 \\
 &= (O-E)^2/E \\
 &= (3-0.15)^2/0.15 \\
 &= 8.12/0.15 \\
 &= 54.13
 \end{aligned}$$

Sum of all values:

11.47+0.19+0.99+2.48+0.55+0.03+10.60+1.09+1.68+0.75+1.07+1.74+6.14+0.54+0.36+0.69+1.50+2.18+17.19+0.75+0.44+0.64+1.09+0.68+54.13=117.30
 11.47+0.19+0.99+2.48+0.55+0.03+10.60+1.09+1.68+0.75+1.07+1.74+6.14+0.54+0.36+0.69+1.50+2.18+17.19+0.75+0.44+0.64+1.09+0.68+54.13=**117.30**

This sum is the chi-square test statistic for our contingency table.

STEP 4: Calculate Chi-Square Value (Total)**Chi-Square Value Calculation:**

Sum of all calculated components from Step 3 gives the chi-square test statistic: $\chi^2=117.30$

Degrees of Freedom (df):

Calculated as:

$$\begin{aligned} df &= (\text{number of rows} - 1) \times (\text{number of columns} - 1) \\ &= (5 - 1) \times (5 - 1) \\ &= 16 \end{aligned}$$

Critical Value and Significance:

- At significance level $\alpha=0.05$ and $df = 16$, the critical value from the chi-squared distribution table is approximately 26.296.

- Since the calculated $\chi^2=117.30$ is **much greater** than the critical value 26.296, we reject the null hypothesis.

Interpretation:

- This means there is a statistically significant association between the two variables: **how accurate respondents think AI is at detecting emotions** and **how helpful they find AI support compared to human support**.
- The observed distributions deviate significantly from what would be expected if they were independent.

Summary:

- **Chi-square statistic:** 117.30
- **Degrees of freedom:** 16
- **Critical value (0.05 significance):** 26.296
- **Decision:** Reject H_0 , accept H_1
- **Conclusion:** There is sufficient evidence to conclude these two ratings are significantly associated. Respondents who rate AI accuracy higher also tend to rate AI support as more helpful.

This completes the chi-square test steps using our actual data from the Excel file of survey responses.

XIV. FINDINGS

- Most users are aware of mainstream AI mental health apps, but adoption still lags, with a sizeable group of non-users.
- Users are cautious about AI's ability to "understand" emotions and tend to trust it only "to some extent".
- Privacy, lack of empathy, and wrong advice are prominent concerns when using AI for mental wellness.
- Desired improvements focus on privacy, empathy, emotion detection accuracy, and therapist integration.
- Both accuracy and helpfulness ratings cluster around moderate scores, showing that while people find AI somewhat useful, they do not consider it a replacement for a human therapist.
- Statistical testing shows a significant relationship between those who think AI is accurate and those who find it helpful, suggesting perceptions of accuracy drive acceptance of AI support.

XV. CONCLUSION

- The survey reflects cautious optimism about AI mental health tools: users appreciate their convenience and certain capabilities, but privacy and empathy are persistent concerns.
- Improving accuracy, privacy, and empathy are likely to boost both usage and trust, as perceptions of helpfulness are tightly linked to perceptions of diagnostic accuracy.
- Statistical analysis supports the need for further development in these areas to increase confidence in AI-based mental health support.

XVI. ACKNOWLEDGEMENT

I would like to express my sincere gratitude to my Research Guide, Ms. Gauri Ansurkar, for her constant support, valuable guidance, and encouragement throughout this research. Her insights and feedback have been a great help in completing this paper successfully.

I would also like to thank all the respondents who took part in my survey. Their honest and thoughtful responses were very helpful in carrying out this research effectively.

XVII. REFERENCES

- [1] Artificial intelligence in positive mental health: a narrative review, by Anoushka Thakkar ¹, Ankita Gupta ¹, Avinash De Sousa ².
- [2] The Use of AI in Mental Healthcare: More Than Just Another Technology, Abhasa.in
- [3] The Potential Influence of AI on Population Mental Health, Catherine K Ettman 1, Sandro Galea 2 Editor: John Torous Reviewed by: Marcos del Pozo Banos, Anil Bachu
- [4] Artificial intelligence in mental health care How AI can be used in psychological practice to streamline administrative tasks, make workflows more efficient, and aid in clinical decision-making, apa.org
- [5] Emotional Intelligence AI in Mental Health, frontiersin.org
- [6] AI in Mental Health: A Review of Technological Advancements and Ethical Issues in Psychiatry Utsav Poudel, B.Tech ,Sachin Jakhar, B.Tech ,Prakash Mohan, Ph.D.ORCID Icon &Anuj Nepal, MIT

