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# Information Channels and Community Prevention Behaviors Regarding Chikungunya Fever: A KAP-Based Study in Dongping, Foshan

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## Abstract

To assess Dongping Foshan residents' knowledge, attitude, and practice (KAP) regarding Chikungunya fever and identify influencing factors, a cross-sectional online survey of 106 respondents collected data on demographics, disease knowledge, information channels, attitudes and prevention habits. Analyses adopted Chi-square tests, Spearman rank correlation, stepwise binary logistic regression and behavioral economics frameworks including attribute substitution and heuristic bias. Respondents were mainly young to middle-aged; 65.1% female and 51.9% college-educated. Most participants (82.1%) correctly recognised Aedes mosquitoes as the transmission vector, yet 62.3% wrongly thought trimming vegetation reduces vectors. WeChat was the leading information source (84.0%). Traditional official channels were oversupplied, whereas short videos and community lectures were in short demand. Overall prevention compliance reached 75.5%, with residents preferring immediate anti-mosquito actions over long-term measures. Univariate analysis linked age and new media exposure to compliance ($p < .05$). Interactive channels showed no independent effect after adjusting for age. Forward Stepwise Logistic Regression confirmed new media independently boosted compliance (OR=1.957, 95% CI: 1.154–3.317, $p = .013$), while age influenced behaviours indirectly via information access. Heterogeneity analysis showed basic CHIKV knowledge cannot trigger action, and new media better promotes immediate preventive behaviours, verifying present bias. Despite decent awareness and compliance in Dongping Community, cognitive blind spots, mismatched information supply and a notable knowing-doing gap remain. New media outperforms traditional channels in facilitating behavioural conversion.

### Keywords

chikungunya fever (CHIKV), knowledge, attitude, and practice (KAP), information channels, behavioral economics, community prevention measures

## 1. Introduction

Chikungunya is an acute mosquito-borne infectious disease primarily spread by Aedes albopictus. It is characterized by sudden high temperature, severe arthralgia, and rashes. Some patients encounter long-term arthroses and suffer from severe quality-of-life deterioration. The warm and humid climate in southern China has created an extensive breeding ground for mosquitoes, posing an increased risk of imported cases triggering local outbreaks. In July 2025, a large-scale cluster outbreak occurred in Foshan, Guangdong Province. By July 26, 4,754 cases were confirmed, with a basic reproduction number (R0) of 16.3, marking the largest outbreak of



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Chikungunya in China to date (as of 2025) [1]. Since the Chinese population generally lacks CHIKV immunity, active mosquito vectors can easily trigger community-wide outbreaks. As one of the communities exposed to intensive prevention campaigns after the outbreak, the Dongping Community in Foshan, China will provide a suitable landscape for studying community responses. Community prevention is the first line of defense in the health crisis. However, research in China concerning Chikungunya is heavily focused on epidemiology, clinical treatment, and vector control. Few empirical community studies have been conducted from the community KAP perspective; furthermore, they mainly focus on dengue fever. This points to the fact that traditional health education in China often relies on the Homo economicus model, the classical assumption that humans are perfectly rational decision-makers who act logically on complete information, constantly calculating costs and benefits to maximize self-interest. They assume that transmitting knowledge directly changes behavior.

In reality, a knowing-doing gap is commonly seen in different studies. For example, dengue awareness among people in Guangzhou is rather high (80.29%), but only mild behavioral changes were triggered by health interventions [2]. This knowledge gap exists across borders, too. Similarly, a survey in Bangkok showed that despite high awareness of dengue disease, residents still lacked much power to act when it comes to CHIKV [3]. The above two pieces of research suggest that awareness alone cannot guarantee behavioral effectiveness. It is essential to consider the psychological factors behind communities' and residents' behaviors regarding the health crisis. To understand the disconnection between knowledge and behaviors, the behavioral economics frameworks (such as present bias, attribute substitution, and nudge theory) help decode these irrational behaviors and provide better ways to optimize prevention strategies. This study uses Dongping Community in Foshan as a field site for a cross-sectional KAP survey on Chikungunya. Using behavioral economics analyses, this study aims to analyze underlying psychological drivers, examine effects of different information channels on prevention behaviors, and inform better community health prevention systems and precise health interventions.

RQ1: What is the current KAP status?

RQ2: How do information channels influence prevention behavior?

RQ3: How can behavioral economics explain observed behavioral patterns?

## 2. Methods

### 2.1 Participants

Participants were recruited among long-term residents in the Dongping Community in Shunde District, Foshan, in Guangdong Province. Eligible participants were individuals aged 11 years or above who have lived in the community for at least 3 consecutive months and can fill in the questionnaire independently (assent of a minor must be obtained from their legal guardian for participants below 18 years old). Excluded participants include those who have a serious mental disorder, language barrier or a temporary transient status. A total of 106 questionnaires were collected, of which 106 were valid.

### 2.2 Survey Tools

Based on the national technical guidelines and similar research, the Dongping Community Chikungunya KAP Questionnaire was designed with five modules: demographics (gender, age, education, health status); disease knowledge (awareness of cases, transmission routes, and prevention measures); information channels (current vs. expected sources of information); prevention attitudes (assessing community measures and personal willingness to protect themself); and prevention behaviors (6 measures: installing screens, using mosquito coils, clearing standing water, using repellents, etc.).

### 2.3 Variable Definitions

Three dependent variables are the focus of this study, aiming to represent different aspects of residents' actions. Firstly, overall prevention compliance is an important variable measured as a binary outcome, where achieving at least 4 of the 6 tracked measures is considered high (1) and fewer are considered low (0). Secondly, a behavior score is calculated by summing all adopted measures on a scale of 0 to 6. Finally, in recognition of the behavioral heterogeneity, prevention methods are segmented into two categories: immediate actions, such



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as using mosquito coils, applying repellents, and wearing long sleeves, which have low entry costs and offer instant results; and long-term actions, such as installing window screens, using bed nets, and clearing standing water, which require sustained effort for a deferred return. The key independent variables are demographics, baseline disease knowledge, and information exposure. To further analyze the exposure of information, each resident's total number of use of particular communication channels are recorded and analyzed into three specific types: New Media, Traditional Official Channels and Interactive Channels.

### 2.4 Data Processing & Statistics

Data were analyzed using SPSS 26.0. The analysis used Chi-square tests (or Fisher's exact test) for categorical data and Mann-Whitney U tests for skewed continuous data. Spearman rank correlation was performed to evaluate association among non-normally distributed continuous variables, while partial correlation was applied to control for potential confounding factors, such as age group. Finally, a forward stepwise binary logistic regression model was constructed to identify independent predictors. The significance level was set at $\alpha = .05$.

## 3. Results

### 3.1 Demographics

A total of 106 responders were collected, and 34.9% were male while 65% were female. Among the participants, non-senior (11–60 years old) participants accounted for 80.2%, while senior (≥61 years old) participants accounted for 19.8%. 51.9% have a college degree or higher.

### 3.2 Chikungunya Knowledge

Overall core knowledge was decent. 82.1% correctly identified Aedes Albopictus mosquitoes as the daytime vector, while 10.4% mistakenly thought nighttime Culex mosquitoes were responsible for spreading CHIKV. A major misconception for 62.3% of respondents was that "trimming plants reduces mosquito breeding," ignoring the fact that standing water is the actual requirement for reproduction. While 78.3% heard of cases nearby, only 23.6% knew of cases within their own community.

### 3.3 Risk Perception

Residents were generally optimistic about their living environment. 55.7% believed there was almost no standing water nearby. 83.0% didn't recall being bitten by a mosquito recently, showing a low awareness of actual exposure to Aedes albopictus.

### 3.4 Information Channels

#### 3.4.1 Actual vs. Expected Demand

According to Table 1, the top actual sources were WeChat (84.0%), SMS (58.5%), and door-to-door campaigns (43.4%). However, there is a mismatch between what the community provides and what residents want: Traditional push-based channels are overused (door-to-door campaigns had a -26.4%

gap between supply and demand), while interactive formats like short videos and lectures are heavily requested but under-supplied (lectures had a +33.1% demand gap).

*Table 1: Supply and Demand of Prevention Information Channel*

| Information Channel | Actual Usage Rate (%) | Expected Usage Rate (%) | Supply-Demand Gap (%) |
|---|---|---|---|
| WeChat (chats, articles, moments) | 84 | 74.5 | -9.5 |
| SMS messages | 58.5 | 41.5 | -17 |
| Door-to-door campaigns | 43.4 | 17 | -26.4 |
| Television | 38.7 | 32.1 | -6.6 |
| Short videos (TikTok, Channels, etc.) | 37.7 | 55.7 | 18 |
| Community bulletin boards | 30.2 | 23.6 | -6.6 |
| Flyers/Brochures | 22.6 | 14.2 | -8.4 |
| Community lectures | 7.5 | 40.6 | 33.1 |



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### 3.4.2 Channel Types and Behavior

Spearman correlation showed that using more new media channels positively correlated with higher prevention scores ($r_s$ = .295, $p$ = .002). Traditional official channels showed a marginally significant positive trend ($r_s$ = .163, $p$ = .094), while interactive channels showed a marginally significant negative trend ($r_s$ = .180, $p$ = .066). After eliminating the confounding effect of age via partial correlation analysis, interactive channels showed no significant correlation with behavior ($r_p$ = -.049, $p$ = .617), indicating that initial differences were driven by age-based channel preferences.

## 3.5 Attitudes and Needs

94.3% felt the community's prevention work was effective. Residents strongly prioritized tangible support, like anti-mosquito supplies (81.1%) and public area extermination (76.4%), over basic educational materials.

## 3.6 Prevention Behaviors

The most common behaviors were using mosquito coils (86.8%) and clearing standing water (80.2%). Overall, 75.5% of the sample demonstrated high compliance (≥4 measures). Immediate actions were generally favored over long-term environmental measures.

## 3.7 Factors Influencing Behavior

### 3.7.1 Univariate Analysis

Overall prevention compliance was used as the dependent variable for the univariate tests. The results showed that age group and the number of new media channels were significantly different across the compliance groups ($p < 0.05$). The number of traditional official channels showed a marginally significant trend ($p < 0.2$), which was later included in the subsequent multivariate analysis (Table 2).

*Table 2: Univariate Analysis of Comprehensive Prevention Behavior.*

| Factor | Category | High Compliance (n=80) | Low Compliance (n=26) | Statistic | P Value |
|---|---|---|---|---|---|
| Gender | Male | 27 (33.8%) | 10 (38.5%) | $\chi^2$=0.192 | 0.661 |
| | Female | 53 (66.2%) | 16 (61.5%) | | |
| Age Group | Non-senior | 68 (85.0%) | 17 (65.4%) | $\chi^2$=4.753 | 0.029 |
| | Senior | 12 (15.0%) | 9 (34.6%) | | |
| Education | High School or below | 39 (48.8%) | 12 (46.2%) | $\chi^2$=0.053 | 0.818 |
| | College or above | 41 (51.2%) | 14 (53.8%) | | |
| New Media Channels | Median (IQR) | 3 (2) | 2 (2) | $Z$=-2.526 | 0.012 |
| Traditional Channels | Median (IQR) | 3 (3) | 2 (3) | $Z$=-1.777 | 0.076 |

### 3.7.2 Univariate Crude Effect Analysis

To evaluate crude effects of each variable, a univariate binary logistic regression was run on the variables that had a $p < 0.2$ in the initial screening. The results showed that age group had a significant impact on compliance (Crude OR = 0.333, 95% CI: 0.121–0.919, $p$ = .034). Specifically, elderly residents were only 33.3% as likely to achieve high prevention compliance compared to others.

### 3.7.3 Multivariate Binary Logistic Regression Analysis

Variables with a $p < 0.2$ from the univariate analysis (age group, number of new media channels, and number of traditional official channels) were entered into a binary logistic regression model using the forward stepwise method (LR). The Hosmer-Lemeshow goodness-of-fit test showed that the model fit the data well ($\chi^2$ = 1.599, $p$ = .660>.05), with an overall prediction accuracy of 75.5%. The regression results showed that only the number of new media channels remained in the final model as an independent positive predictor of overall prevention compliance ($p$ = .013). After controlling for other variables, every additional new media channel a resident used increased their likelihood of achieving high compliance by 95.7% (OR = 1.957, 95% CI: 1.154–3.317). Age group and traditional information channels did not make it into the final model, suggesting that



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their effects on compliance are likely indirect, playing out through the way people access information instead (Table 3).

*Table 3: Binary Logistic Regression Results for Factors Influencing Comprehensive Prevention Compliance.*

| Independent Variable | Regression Coefficient (B) | Standard Error | Wald Value | P-value | OR | 95% Confidence Interval (CI) |
|---|---|---|---|---|---|---|
| # of New Media Channels | 0.671 | 0.269 | 6.212 | 0.013 | 1.957 | 1.154 ~ 3.317 |
| Constant | 0.057 | 0.452 | 0.016 | 0.899 | 1.059 | - |

### 3.7.4 Heterogeneity Analysis of Prevention Behaviors

To specify how different types of prevention behaviors are influenced, six prevention measures are divided into two categories: Immediate behaviors (using mosquito coils, applying repellents, wearing long sleeves and pants) which have low entry costs and instant results. Long-term behaviors (installing window screens, using bed nets, clearing standing water) which require ongoing effort and have delayed benefits. The Spearman rank correlation was used to analyze prevention methods' links to knowledge and information channels. The results showed that scores for transmission knowledge had no significant correlation with either type of behavior, indicating that a mere understanding of the disease isn't enough to drive action. On the other hand, the number of new media channels was significantly and positively correlated with both types of behavior. However, the link was stronger for immediate behaviors ($r_s$= .272, $p$= .005) than for long-term behaviors ($r_s$= .230, $p$ = .018), as detailed in Table 4.

*Table 4: Correlation Between Different Prevention Behaviors, Knowledge, and Channels.*

| Factor | Correlation Coefficient with Immediate Behavior ($r_s$) | P-value | Correlation Coefficient with Long-term Behavior ($r_s$) | P-value |
|---|---|---|---|---|
| Transmission Knowledge Score | -0.054 | 0.586 | -0.022 | 0.823 |
| Number of New Media Channels | 0.272 | 0.005 | 0.23 | 0.018 |

## 4. Discussion

### 4.1 Explaining the High KAP Baselines and Behavioral Mechanisms

The results show high overall awareness (82.1%) and behavior compliance (75.5%) in Dongping compared to non-endemic regions. For instance, a survey of healthcare workers in a non-endemic region of Sichuan showed a decent knowledge baseline of 60.90% but an actual practice rate of only 40.06% [4]. This typical knowing-doing gap narrows significantly in Dongping, which can be explained by the psychological and social mechanisms during the massive 2025 Foshan outbreak. Experiencing the largest CHIKV outbreak in China with a high R0 of 16.3 [1], Dongping people no longer view CHIKV as an abstract concept in textbooks. Rather, it was an immediate, local crisis paired with high-intensity, top-down community outreaches that made the health threat impossible to ignore, thus overriding the public apathy that frequently fails those health campaigns. Similarly, the strong behavioral compliance stems from the collective momentum rather than mere individual willpower. Foshan's emergency response involved ubiquitous physical interventions like public resource distribution and coordinated community cleanups. When residents see local officials and neighbors taking actions proactively, the psychological friction to participate is lowered, shifting prevention measures from an individual chore to a collective norm. However, a persistent vegetation misconception showcases that human cognition often relies on shortcuts under bounded rationality, as over half of residents incorrectly focus on trimming plants rather than removing standing water. This is a classic example of heuristic bias and attribute substitution in behavioral economics: residents conflate plants with mosquitoes likely because adult mosquitoes are easily spotted when resting on those highly visible plants during the day. In contrast, actual breeding sites, such as gaps between tree trunks and inlets of drainage pipes filled with stagnant water, are easily overlooked. Kahneman and Tversky (1972) refer to this phenomenon as the representativeness heuristic, where people judge probability based on what looks obvious and familiar rather than the harder-to-see reality underneath [5]. The result is a false sense of security and wasted efforts trimming bushes, leading to lower prevention efficiency, ultimately.



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## 4.2 Quality Over Quantity in Information Channels

This study reveals that the type of information channel matters far more than just increasing volume. New media independently drove behavior, while traditional channels did not. This pattern has been observed before. During COVID-19, Li and Liu found that among Chinese citizens, social media use frequency significantly and positively predicted preventive behaviors ($\beta = .20, p < .001$), whereas simple information exposure without engagement, such as official social media, did not [6]. Similar results occur in the mHealth intervention study about dengue fever in Guangzhou. Interactive, WeChat-based health education significantly improved knowledge, yet the blast of information made little difference in behavioral changes, reinforcing that community interaction plays a key role in translating knowledge into execution [2]. The rich scenarios in the new media content fit users' fragmented reading habits, filling the gap between cognition and action. On the other hand, traditional channels, which rely on repetitive and one-way pushes, often cause residents to tune out.

## 4.3 The Link Between Age and Behavior

Although initial analysis showed age had a significant impact on behavioral changes, when controlling for information channels, the effect is no longer significant after adjusting for age. This means age only impacts people's behaviors through access to information. The non-senior group's high compliance rate (80.0%) is significantly higher than the senior group (57.1%). Because a high level of compliance requires residents to take 4 or more preventive measures, more diverse and comprehensive prevention actions are needed. The young and middle-aged group are provided with more prevention insights through new media content, which leads to them deploying multiple tactics like repellents, window screens, and wearing long clothing. Meanwhile, the internet penetration rate of China's elderly users is well below the national average. According to China Internet Network Information Center, "Internet penetration among [seniors] reached 52 percent" by mid-2025 [7]. That means nearly half of all seniors are completely offline. For them, WeChat articles and short videos simply do not exist as information sources. This triple divide, an access gap, a usage gap, and a knowledge gap, puts the old generation at a major disadvantage [8]. Consequently, younger adults who have access to diverse methods via new media naturally achieve higher compliance.

## 4.4 Suggestions for Prevention Strategies

First, public health efforts need to shift from expanding channels to enhancing the quality in terms of scenario-based interventions. Communities should optimize their supply structures by shifting resources from low-engagement methods, such as unread flyers and door-to-door campaigns, to hands-on community workshops and disease prevention supplies that are highly desired by residents. Additionally, communities are advised to implement tiered, precision interventions for different age groups. For the younger and middle age groups, the focus should remain on short video engagement through social media platforms. Whereas for senior people, offline community lectures and person-to-person support should be focused on as the main method to bypass their digital obstacles. Second, the campaign media strategies must combine diverse digital formats (infographics, video explanations, brief expert clips, etc.), as the research indicated that mobile health interventions integrating various formats successfully overcome the communication bottlenecks faced by traditional health education [2]. With this in mind, disease control departments can curate compact information (60-second TikToks showing how a single puddle breeds thousands of mosquitoes, etc.) that is visually captivating and fits modern-day consumption formats. Furthermore, media materials could leverage clear animations and before-and-after real-world visuals to dismantle common misconceptions like plants = mosquitoes, nudging residents' attention back to clearing standing water. Finally, health education and community outreach must move beyond passive information delivery to establishing long-term, practical skills. As mentioned, avoiding the digital divide problem is to shift toward face-to-face community lectures and personalized support for seniors, not relying on media platforms. At the same time, more interactive workshops that enable residents to feel the real-life application of health prevention strategies should be provided in the community, further bridging the gap between knowledge, attitude, and practice.

## 4.5 Limitations

This study has several methodological limitations that need to be considered in interpreting the results. The sample size is relatively small (n=106) and was drawn from only one community using convenience sampling,



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which limits the generalizability to other communities. Moreover, self-selection bias may occur when the study was solely based on voluntary participants, residents who are more health-conscious or concerned about mosquito-borne outbreaks are more likely to participate, which could lead to overestimation in the baseline of awareness and compliance. Utilizing a self-reported questionnaire may lead to response bias. Firstly, participants could suffer recall bias when reporting mosquito bite exposure or specific prevention habits over time. Also, social desirability bias may result in overreporting of prevention behaviors (such as regularly eliminating standing water) to meet community expectations. The cross-sectional design gathers data at a single time point, making it infeasible to infer a causal relationship. In other words, there is a high statistical association between the number of new media channels used and a better compliance rate in prevention; nevertheless, we cannot conclude that new media consumption directly affects the behaviors because confounding variables, such as age group, might be influencing both the channel choice and actions.

## 5. Conclusion

Based on our survey with 106 respondents, Dongping residents display strong KAP baselines in CHIKV prevention, reflecting successful outbreak management in the preliminary stage. Still, issues like unaligned supply of information, cognitive blind spots, and heuristic bias remain. The study demonstrates that acquiring appropriate channels of communication may play a more important part than a higher knowledge rate alone in promoting preventative behavior. Regarding future epidemic outbreaks, merely broadcasting traditional health warnings may have little impact. Public health teams should integrate behavioral economic principles (such as nudging) into disease prevention strategies, using high-quality new media to change residents' passive, short-term reactions to active, long-term prevention habits.

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## Conflicts of Interest

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