Knowledge, attitudes, and behavior of the Hmong in Wisconsin towards ticks and tick-borne diseases

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Background

The Hmong are an East Asian ethnic group that began to immigrate to the United States in 1975.

There are an estimated 335,000 Hmong in the United States, mostly living in three states.

1) California: 107,458
2) Minnesota: 95,094
3) Wisconsin: 62,331

Wisconsin is ranked among the top five states with the highest reported incidence of tick-borne diseases, and there is a paucity of data on the Hmong's knowledge of tick-borne diseases.

In addition, there are limited linguistically appropriate educational materials for the Hmong who are not fluent in English.

Objective

We surveyed the Hmong in Wisconsin to better understand their knowledge, attitudes, and behavior (KAB) toward ticks and tick-borne diseases. We also assessed their ability to recognize the blacklegged tick, *Ixodes scapularis*.

Methods and Results

KAB Survey

Recruitment effort at the Hmong Labor Day Festival Tournament.

Have you ever removed a tick you found crawling on or attached to your body?

Hmong	Yes	48%
	No	52%
White	Yes	87%
	No	13%

Have you heard of Lyme disease?

Hmong	Yes	69%
	No	31%
White	Yes	99%
	No	1%

How serious do you feel about Lyme disease?

Hmong	E/V	40%
	N/S/S	60%
White	E/V	7%
	N/S/S	93%

N/S/S=Not at all/Slightly/Sometimes
E/V=Extremely/Very

After being outdoors in places where you could get ticks, how often do you check yourself for ticks?

Hmong	A/M	38%
	N/R/S	60%
White	A/M	68%
	N/R/S	27%

A/M=Always/Most of the time
N/R/S=Never/Rarely/Sometimes

When you are outdoors in places where you could get ticks on you, how often do you use bug spray?

Hmong	A/M	46%
	N/R/S	52%
White	A/M	45%
	N/R/S	52%

A/M=Always/Most of the time
N/R/S=Never/Rarely/Sometimes

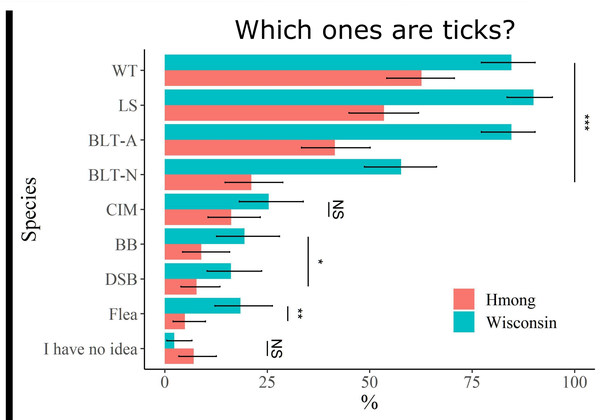
Which of the following would you be willing to do to protect yourself and others in your household from ticks?

Check for ticks	19%	20%
Shower or bathe	23%	16%
Put clothes in dryer for at least 10 minutes	13%	11%
Use bug spray	19%	15%
Wear clothes treated with permethrin	12%	15%
Treat pets with a Product to prevent tick bites	11%	15%

- The survey (modified from Beck et al., 2021) consists of 5 sections: 1) experience with ticks and tick-borne diseases, 2) current preventative behaviors, 3) willingness to practice preventative behaviors, 4) preference for learning about tick bite prevention, 5) participant and household demographics.
- We recruited 210 Hmong participants during the Hmong Labor Day Festival of 2022.
- Participants were given the option of taking the survey in English or Hmong.
- We compared our results to 1,026 Wisconsin White participants from Beck et al. (2021).

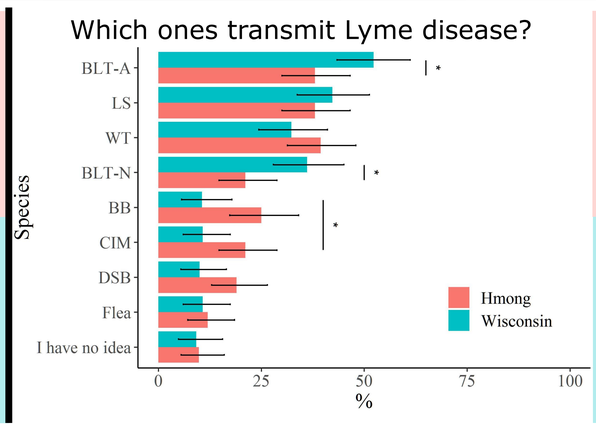
Resin Survey

- We recruited 156 Hmong in 2022.
- Participants were shown a resin block and asked:
  - Which ones are ticks?
  - Which ones transmit Lyme disease?
- We compared the 156 Hmong in our study to the 149 from the Bron et al. (2020) study.



3% of Hmong participants correctly identified all ticks.

30% of participants (Wisconsin) from Bron et al. (2020) correctly identified all ticks.



0% of Hmong participants correctly identified BOTH blacklegged adult and nymphal ticks.

15% of participants (Wisconsin) from Bron et al. (2020) correctly identified BOTH blacklegged adult and nymphal ticks.

Hmong (n=156)

Wisconsin (n=149)

WT = Wood Tick, *Dermacentor variabilis*
BB = Bark beetle, *Hylesinus aculeatus*
LS = Lone star tick, *Amblyomma americanum*
CIM = Swallow bug, *Oeciacus viarius*
BLT-N = Blacklegged tick nymph, *Ixodes scapularis*
Flea = Species not determined
BLT-A = Blacklegged tick adult, *Ixodes scapularis*
DSB = Drug store beetle, *Stegobium paniceum*

References

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Conclusions

KAB SURVEY

- Hmong participants were less likely to, 1) have heard about Lyme disease or other tick-borne diseases, 2) consider Lyme disease a serious disease than White participants, and 3) perform tick checks after being outdoors in places where ticks could live.
- Hmong participants were as likely as White participants to use bug spray outdoors.

RESIN SURVEY

- Hmong participants were less likely to correctly identify blacklegged ticks using the resin block.
- Hmong were more likely to incriminate non-tick specimens as vectors of Lyme disease, suggesting a lack of awareness of Lyme disease.

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