

Exploring Attitude, Knowledge of Community-Setting Pharmacist Regarding Calcium Supplementation Associated with Cardiovascular Risk

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ABSTRACT

High calcium intake, which is thought to increase the risk of myocardial infarction, stroke, and cardiovascular mortality as well as non-cardiovascular events like kidney stones, is being consumed by a large portion of the general population, raising questions about the cardiovascular effects of calcium supplementation. It is crucial to educate healthcare professionals, especially pharmacists in community settings, on the long-term use of calcium supplements linked to cardiovascular risk in order to address this rapidly expanding issue. In our 3 months cross sectional survey total 500 community -setting pharmacists were included from various types of pharmacy including independent and chain pharmacy shops situated in 5 districts of Tamil Nadu. A self-administered validated questionnaire was used to assess the attitude, knowledge of community-setting pharmacist regarding calcium Supplementation associated with cardiovascular risk. It was observed that most of the community pharmacists gave a negative response (53.71%) to all the questions asked. While the percentage of uncertainty (don't know, 35.48%) regarding the answers for the questions closely followed the negative responses, the positive responses remained largely lower (10.4%). Our study reveals that many of the community-setting pharmacists are need to be educated on calcium supplementation and its risk concerning the burden of public health

Keywords: [Pharmacist, Community, Community Pharmacist, Calcium, Attitude, Knowledge]

INTRODUCTION

The number of people taking calcium supplements has increased dramatically in recent years, owing to the introduction of new pharmaceutical businesses specializing in the marketing of dietary supplements, with calcium supplementation as their primary business axis. It is mostly due to calcium's unique role in both prevention and treatment. Osteoporosis management and bone fractures on the other hand, there is a

sliver of rising evidence on the opposing side. Calcium supplementation has been shown to have negative effects on non-skeletal systems, particularly the cardiovascular system. In daily practice, this has been a source of concern.[1] Many people in the general population take high doses of calcium-containing multivitamin and mineral supplements, raising concerns about the cardiovascular effects of calcium supplementation, particularly when it leads

to high calcium intake, which is thought to increase the risk of myocardial infarction, stroke, and cardiovascular mortality, as well as non-cardiovascular events like kidney stones.[2] Despite the fact that increased dietary calcium consumption has been demonstrated to have a protective effect, a large number of studies have found a link between calcium supplementation and unfavourable cardiovascular events.[1] On this rapidly growing topic, it is critical to raise awareness and assess understanding among health care providers, particularly pharmacists in community settings, about the long-term use of calcium supplements linked to cardiovascular risk. The association between dietary calcium intake and CVD incidence or death in middle-aged and older persons has been studied in a number of prospective epidemiologic investigations. The findings were mixed, and the combined data do not significantly suggest that a higher dietary calcium intake reduces the risk of coronary artery disease (CAD) or stroke.[3] Few prospective studies have looked at the relationship between calcium supplement use and the risk of CVD. The combined findings indicate that taking calcium supplements has no discernible effect in lowering the risk of CAD or stroke.[4] Anderson et al. published a study in the Journal of the American Heart Association recently that looked at the link between calcium supplement use and the risk of Coronary Artery Calcification (CAC). After 10 years of follow-up, calcium supplement use was linked to an increased risk of incident CAC (relative risk [RR]1.22; 95 percent confidence interval [CI],1.07-1.39).[5] This has brought the issue to the forefront, and there is a need to improve health workers' understanding and awareness of the cardiovascular risks connected with calcium supplementation, particularly among community pharmacists. While coronary artery calcium (CAC) has now been incorporated in the recent AHA/ACC prevention guidelines 1 for the prediction of future cardiovascular disease (CVD) events, it is less clear whether an

extra-coronary calcification, such as abdominal aorta calcification (AAC), adds to prediction. Not utilizing information about extra-calcium could be a missed opportunity, because information about extra-coronary calcifications might efficiently improve upon existing risk stratification models utilizing traditional risk factors and CAC.[6] Studies exploring the effect of calcium intake or calcium supplementation on cardiovascular risk suggest that systolic blood pressure increases under low calcium intake and decreases with calcium supplementation.[7] A more recent meta-analysis, however, found no statistically significant differences between calcium supplementation with or without vitamin D on coronary heart disease events (pooled relative risk, 1.02 [CI, 0.96 to 1.09]) or death (pooled relative risk, 1.04 [CI, 0.88 to 1.21]). [6].[8] The purpose of our study was to examine community pharmacists' knowledge and attitudes about calcium supplements and cardiovascular risks, as well as to promote awareness and address challenges related with a lack of understanding on the topic.

Objective of the Study

To assess Attitude, knowledge of community-setting pharmacist regarding calcium Supplementation associated with cardiovascular risk

METHODOLOGY:

The conducted study was a cross-sectional 3 month survey targeting the Community-setting pharmacist situated in the northern part of Tamil Nadu includes Chennai, Kancheepuram, Thiruvallur, Chengalpattu, Cuddalore districts. All the community setting pharmacists who were willing to participate were included using simple random sampling methods in the study. A total 100 community-setting pharmacists were included in this study from each 5 districts of Tamil Nadu. In this study, various pharmacist from various pharmacy shops including independent and chain pharmacy were participated. Such as,

Medplus, Apollo pharmacy, Om pharmacy and Bawa pharmacy etc. A closed-ended self-administered questionnaire was distributed to the study participants in person and responses were collected. The study protocol and the questionnaire was evaluated and validated by the Drug Inspector. Recorded responses were analyzed descriptively in terms of frequency and percentage.

RESULT

A total of 5 districts belonging to the northern part of Tamil Nadu, India was included in the study, namely, Chennai, Kancheepuram, Thiruvallur, Chengalpattu, Cuddalore. 100 community-setting pharmacies from each of the 5 districts were visited and a closed-ended self-administered

questionnaire was distributed to each of them and response was collected. The collected response is shown in table 1. It was observed that most of the community pharmacists gave a negative response (53.71%) to all the questions asked. While the percentage of uncertainty (don't know, 35.48%) regarding the answers for the questions closely followed the negative responses, the positive responses remained largely lower (10.4%). [Table 1] City wise distribution of responses is depicted in Table 2. Overall, the knowledge and attitude about the cardiovascular risk associated with calcium supplements among Community- Pharmacists was found to be relatively lower in all the 5 districts that were investigated.

Table 1 Knowledge and Attitude based questionnaire on calcium supplementation associated with cardiovascular risk

QUESTIONS	YES (%)	NO (%)	DON'T KNOW(%)
Q1 .Are calcium supplements associated with cardiac function?	5	58.4	36
Q2 .Do calcium supplements cause coronary diseases?	9.4	54.4	35.2
Q3 .Can cardiac disease patients take calcium supplements?	14	51.4	34.8
Q4 .Can taking calcium supplements be harmful?	8.8	59.2	32
Q5 .Do calcium supplements cause calcification of arteries?	13.6	54.4	29
Q6.Can calcium supplements cause heart attacks?	8.8	47.5	44
Q7 .Are calcium supplements helpful in treating Cardiovascular Disease (CVD)	6.6	48	45.4
Q8 .Are calcium supplements used in the treatment of other diseases? (eg. Osteoporosis)	15.2	56.4	28.4
Q9 .Do calcium supplements cause side effects?	10.8	52.6	36.6
Q10 .Can taking too many calcium supplements cause heart disease?	11.8	54.8	33.4
Total percentage	10.4	53.71	35.48

Table 2 District wise distribution of questionnaire response

Questions	Response	Name of the District (%)				
		Chennai (n=100)	Kancheepuram (n=100)	Tiruvallur (n=100)	Chengalpattu (n=100)	Cuddalore (n=100)
Q1	Yes	7	4	3	4	7
	No	63	55	55	56	63
	Don't know	30	41	42	40	30
Q2	Yes	8	12	8	11	8
	No	57	54	53	55	58
	Don't know	35	34	39	34	34
Q3	Yes	16	12	14	12	16
	No	50	53	50	54	50
	Don't know	34	35	37	34	34
Q4	Yes	9	10	9	9	7
	No	62	57	66	59	52
	Don't know	29	33	25	32	41
Q5	Yes	17	11	11	12	17
	No	55	61	54	62	55
	Don't know	28	28	35	26	28
Q6	Yes	10	8	8	8	10
	No	53	44	44	43	52
	Don't know	28	48	48	49	38
Q7	Yes	7	5	8	6	7
	No	51	44	52	43	50
	Don't know	42	51	40	51	43
Q8	Yes	19	12	13	12	20
	No	55	56	60	57	54
	Don't know	26	32	27	31	26

Q9	Yes	14	7	12	7	14
	No	57	47	55	47	57
	Don't know	29	46	33	46	29
Q10	Yes	10	13	13	13	10
	No	51	60	53	60	50
	Don't know	39	27	34	27	40

DISCUSSION

A recent study has shown up to 70% of old women in developed countries take calcium supplements [9]. The risk of myocardial infarction and stroke are increased by 24 - 26% and 15 - 19% respectively, according to a Meta Analysis conducted by Bolland et al.[10]. Institute of Medicine guidelines stipulate that the recommended daily calcium intake for people aged 18 to 70 years and women aged 18 to 50 years is 1000 mg/d, and 1200 mg/d for people aged 70 years or older and women older than 50 years[1]. But to date, increase in intake of over the counter multivitamin containing calcium has led to greater risk of side effects. Since the knowledge and attitude about the cardiovascular risk associated with calcium supplements among Community-Pharmacists was found to be relatively lower in our study, it is urgent to educate Community Pharmacists on the possible risk of excessive and unnecessary calcium supplementation in order to prevent misuse and excessive intake of these dietary supplements. It is important to monitor the availability and use/intake of multivitamins in patients/healthy populations. From a cardiovascular perspective, dietary calcium intake by eating foods high in calcium appears safer than calcium loading with supplements.[11] The relevance of calcium and vitamin D supplements in older persons is uncertain, despite the fact that appropriate calcium and vitamin D intake is essential for maintaining bone health. Combining calcium and vitamin D supplements lowered the risk of fractures in older persons, according to certain systematic reviews [12].

The Framingham study served as the basis for the traditional cardiovascular risk assessment, which was subsequently improved with the help of additional sizable

cohort studies. Age, sex, race, diabetes status, blood pressure (BP) or controlled hypertension, cholesterol readings, and tobacco usage are all common factors in risk assessments. It is advised that all patients have their 10-year ASCVD risk determined. The Framingham risk calculator was developed from a less diverse cohort and is a well-validated tool, but it solely predicts the risk of heart attack and is therefore less generalizable [13]. Sunil M Shah et al (2010) studied that calcium supplementation associated cardiovascular disease in older women [14].

It is important for pharmacists to understand the recently published data and to become knowledgeable about how these findings translate to patient care. Prior to initiating calcium supplementation, it is vital that the patient's estimated daily calcium intake be assessed by the health care team. Explain to patients that the findings concerning calcium supplements do not apply to calcium-rich foods, and that there are no reported cases of calcium intoxication from dietary calcium sources [15]. Also explain that because the calcium found in food has a much smaller effect on serum calcium, it is preferred to supplements. Lactose-intolerant patients and those on a strict vegetarian diet should be encouraged to obtain calcium from non-dairy or calcium-fortified products. A multidisciplinary approach to patient care may help educate patients about appropriate and inappropriate calcium intake by supplementation, as well as prevent them from discontinuing medications owing to misinformation [7].

CONCLUSION

According to our findings, community pharmacists have a lesser level of knowledge and awareness about calcium supplements and their negative effects. In

recent years, the rapid increase in the use of over-the-counter multivitamins including calcium supplements has necessitated a greater level of understanding and caution on the part of the dispenser. In India, suitable norms and regulations for the manufacturing, labelling, and marketing of dietary supplements are also required. To protect the health of the general public, such restrictions must be strictly enforced. However, further evidence-based research is needed to assess the link between calcium supplementation and cardiovascular risks.

Declaration by Authors

Ethical Approval: Approved

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