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CONSUMER BEHAVIOUR AND PHARMACIST DISPENSING PATTERNS OF MULTIVITAMINS IN PUNE CITY: A CROSS-SECTIONAL STUDY WITH STATISTICAL AND SWOT ANALYSIS OF COMMONLY DISPENSED BRANDS

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ABSTRACT

A cross-sectional study was conducted to assess consumer behaviour and dispensing patterns among selected areas of Pune city for multivitamins. This study consisted of structured questionnaires for 120 multivitamin consumers and 181 pharmacists for assessment of frequency of consumption, recommendation, purposes of consumption, formulation preferences, cost and dispensing practices. It was found that there is a high influence of physicians on the consumption pattern and the majority and the majority of consumers consume supplements periodically rather than regularly. Maintenance of general health, immunity, and health of hair and skin were some of the purposes of consumption. Tablet form was the preferred choice by most of the consumers. Majority of the consumers spent ≤ ₹400 per month on multivitamins. The pharmacists found increasing demand for multivitamins and dispensed through prescription as well as OTC route. Cochran's Q test showed significant differences among the major categories ($Q=55.81$, $p<0.005$). According to McNemar post hoc test, there is a significant difference between Bevon and other categories. From SWOT analysis we got to know, strengths of the brands include its ease of availability and its being marketed by a pharmaceutical company, whereas weaknesses include the possible adverse effect, competition and lack of personalization.

KEYWORDS: Multivitamins, Supplementation, Market survey, Consumer behaviour, Pharmacist

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 04 July-August; 2026 Page. No. 612-630

dispensing pattern.

1. INTRODUCTION

The National Institute of Health's State of the Science Conference defines multivitamins and multi-minerals (also referred to as MVMs) as any supplements containing at least three (3) vitamins and/or minerals without including herbs, hormones, or drugs. ("Office of Dietary Supplements - Multivitamin/mineral Supplements," n.d.) [1]

In India, multivitamins are primarily regulated under the FSSAI as a health supplement, which defines it as; products containing one or more vitamins, with or without minerals, amino acids, or botanicals, intended to supplement the normal diet. They must be marketed only in "dosage" forms such as capsules, tablets, liquids, or powders and are not intended to replace a conventional meal.[2]

However, under FSSAI it is explicitly stated that they are not for medical use. But these multivitamins fall under the CDSCO guideline if:

- it contains high-potency ingredients beyond the limits of FSSAI,
- it makes explicit therapeutic claims on its labels
- uses pharma-grade excipients or drug delivery systems,
- or when it is sold through doctors or marketed as such.

Post-COVID Surge in Multivitamin Consumption and Market Growth

Due to the great increase in emphasis on preventative health and wellness as a result of the COVID-19 epidemic, usage of multivitamins and dietary supplements has greatly increased. Dietary supplements in general, especially with regard to improving one's immune system, were widely available as over-the-counter products during the COVID-19 pandemic; therefore, they benefited from being readily available at an increased level of sales because consumers were looking for ways to improve their health and wellness during this challenging period.[3] According to specific sources related to this market, the multivitamin segment has shown the highest growth rate and is expected to have the highest growth potential in the Indian Vitamin Supplements Market. As per the data from the Food Safety and Standards Authority of India, the dietary supplements market was valued at approximately USD 3,924.44 million in 2020 and is projected to reach USD 10,198.57 million by 2026, reflecting an impressive compound annual growth rate (CAGR) of around 22%.("FSSAI," n.d.)[4] Additionally, this segment of the Vitamin Supplements Market is also expected to show a growth rate of 21% annually, from 2025 to 2033.[5] Moreover, the revenues generated by this segment are estimated to be over USD 10,211.7 million by the end of 2033. In this regard, the Multivitamin Group has shown the highest revenues generated and has also shown the highest growth potential.[6] The segment was earlier used occasionally; however, it is now an integral part of health maintenance as well as wellness support. This can be substantiated by factors such as growth rate, share, as well as

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 04 July-August; 2026 Page. No. 612-630

dependency factors that reflect the contribution of multivitamins to the overall growth of India's nutraceuticals industry.[7] Despite increased usage of it, there are still many gaps in terms of awareness and reliance on professional guidance. Given this situation, the purpose of the survey was to assess people's knowledge, and usage patterns of multivitamins, thereby identifying critical gaps and informing rational and evidence-based use.

2. THEORETICAL BACKGROUND

2.1 Theory of Planned Behaviour and Multivitamin Consumption

The Theory of Planned Behaviour (TPB), developed by Icek Ajzen, is a useful theoretical model to examine consumer behaviour as far as it relates to multivitamin usage. As mentioned before, according to this theory, behavioural intention depends on three important factors, namely, attitude towards the behaviour, subjective norms, and perceived behavioural control. Specifically, regarding the use of dietary supplements, consumers tend to buy them provided that they are good for maintaining the consumer's health, encouraged by medical specialists or family members, and are available and not expensive.[8]

Literature in the field of dietary supplements behaviour reveals that health maintenance and illness prevention attitudes play a vital role in consumers' choice. According to Conner et al. (2001),[9] consumers are used to viewing dietary supplements as a kind of "health insurance" against future illnesses, besides, social influences of healthcare specialists and media are also very influential in terms of dietary supplements consumption.

Indeed, in accordance with the aforementioned theory, physicians' advice proved to be the most significant predictor of initiation and selection of multivitamin usage.[10]

2.2 Community Pharmacy Practice and Pharmacist Counselling Behaviour

Community pharmacists are being viewed as available healthcare professionals who can play roles in patient counselling, education, and prevention. Contemporary pharmacy practice revolves around the core themes of pharmaceutical care, rational drug use, and counselling as integral professional responsibilities.[11]

However, pharmacist counselling behaviour is affected by organizational, professional, and environmental factors. Studies focusing on pharmacists' interaction with patients have revealed that lack of time, counselling environment, insufficient counselling skills and training, and negative consumer perceptions can negatively impact pharmacist counselling behaviour in community pharmacies.[12] According to Fleming et al. (2015), through the application of the Theory of Planned Behaviour, patients recognize the benefits of pharmacist counselling, but they face various barriers when attempting active interaction with pharmacists.[13]

As advisors for OTC products and preventive health supplements, pharmacists are involved in

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 04 July-August; 2026 Page. No. 612-630

promoting multivitamins to patients. Additional systematic reviews on dietary supplement counselling have revealed that pharmacists frequently lack the necessary knowledge and confidence regarding counselling about nutraceuticals and supplements. Unclear regulation in relation to dietary supplements and lack of proper education may also influence counselling approaches in this area.[14] In this respect, the results obtained from the current research reflect the transitional status of community pharmacists in India, who have both dispensing duties and increasing demands for counselling on health promotion.

3. RESEARCH GAP, OBJECTIVES, AND RESEARCH QUESTIONS

3.1 Research Gap

Previous studies on multivitamin and dietary supplement use among individuals have mainly concentrated on consumer awareness, knowledge, attitudes, and overall usage pattern. Several studies carried out in India have indicated an increase in multivitamin consumption by the people for preventive health care and boosting immunity and general well-being.[15] Studies from Rajasthan, Chandigarh, and Pune have indicated that prescription by doctors is a major reason behind multivitamin intake; whereas awareness among the consumers on adverse effects, rational and evidence-based consumption remains low.[16]

Most studies have been confined to consumers or to pharmacists' knowledge and awareness in isolation. Limited studies exist where consumers' behaviour as well as dispensing patterns of the pharmacy have been studied together within the same research design, especially in the context of community pharmacies in India.[17] Similarly, little data exists on the effects of pharmacists' activities on the decision-making process of customers while purchasing multivitamins. With an increasing trend towards the OTC availability of nutraceuticals as well as preventive health care after COVID-19 pandemic in India, there has been a considerable change in the usage pattern of supplements.[18] Finally, region specific literature related to the choice of multivitamins by consumers, influence of physicians/pharmacists, and business aspects involved in dispensing behaviour in community pharmacies in Pune is lacking.

Thus, this study aims at filling these gaps by conducting an analysis of the consumer behaviour study, pharmacists' dispensing patterns, comparative statistical analysis of popularly dispensed brands, and also a SWOT analysis of the market in question.

3.2 Research Objectives

• To evaluate consumer behaviour and pharmacist dispensing patterns associated with multivitamin products in selected regions of Pune city.
• To assess the frequency and purpose of multivitamin consumption among consumers.

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 04 July-August; 2026 Page. No. 612-630

• To identify factors influencing consumer choice of multivitamin products.
• To evaluate sources of recommendation for multivitamin use.
• To assess consumer preference regarding dosage forms and monthly expenditure on multivitamins.
• To analyse pharmacist dispensing practices related to prescription and OTC multivitamin products.
• To identify commonly dispensed multivitamin brands in community pharmacies.
• To statistically compare dispensing frequencies of major multivitamin brands using Cochran's Q Test and McNemar Test.
• To evaluate market strengths, weaknesses, opportunities, and threats (SWOT) associated with commonly dispensed multivitamin brands.

3.3 Research Questions

1. What are the prevailing patterns of multivitamin usage among consumers in Pune?
2. What determines the choice of consumers to purchase multivitamin preparations?
3. What are the key factors that determine recommendations and purchases of multivitamins?
4. What are the preferred routes of administration and expenditures in relation to multivitamin usage?
5. How do pharmacists dispense multivitamins in community pharmacies – prescribed or OTC?
6. Which multivitamins are commonly recommended by pharmacists?
7. Is there a statistically significant difference between the common multivitamins' dispensing frequency?
8. What drives recommendation and dispensation of multivitamins by pharmacists?
9. What are the Strengths, Weaknesses, Opportunities, and Threats analysis of the dominant multivitamins brand in India?

4. METHODOLOGY

4.1 Study Design

In the current study, a cross-sectional design involving administration of questionnaires was used to assess the behaviours of consumers as well as dispensing behaviour of pharmacists concerning multivitamins in specified areas of Pune. In this study, two respondent groups were involved which comprised consumers who took multivitamin supplements and pharmacists who dispensed multivitamin products.

A survey method was preferred since the study would involve systematic gathering of data related to usage, recommendations, consumer choice, spending, and dispensing of multivitamins during the period of the study. The dispensing patterns of multivitamin by pharmacists was analysed using non-parametric statistical methods. Cochran's Q Test was applied to determine whether a statistically significant difference existed among the dispensing frequencies of the identified multivitamin brands. [19-21] Since Cochran's Q test demonstrated a significant overall difference, post hoc pairwise

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 04 July-August; 2026 Page. No. 612-630

comparisons were performed using McNemar Test. [20-22] Bonferroni correction was applied to minimize Type I error resulting from multiple pairwise comparisons.[23] A p-value less than 0.05 was considered statistically significant for Cochran's Q test, whereas the Bonferroni corrected alpha value (0.0033) was considered for McNemar post hoc analysis.

4.2 Study Area

The study was conducted in selected regions of Pune. Pune was chosen because it is a rapidly urbanizing area with an increase in preventive health awareness among people and expansion in the nutraceuticals and pharmaceutical markets.

4.3 Study Population

The study population consisted of two categories:

4.3.1 Consumers

Individuals consuming or having previously consumed multivitamin supplements were included in the consumer survey.

Consumer Inclusion Criteria

- Consumers aged 18 years or older
- Consumers who are either currently using or had previously used multivitamin supplements
- Consumers willing to be part of the study

Consumer Exclusion Criteria

- Individuals below 18 years of age
- Non-compliance by the participant with providing consent
- Incomplete questionnaire responses

4.3.2 Pharmacists

Registered pharmacists working in retail, hospital, and wholesale pharmacies and involved in dispensing multivitamin products were included in the pharmacist survey.

Pharmacist Inclusion Criteria

- Registered pharmacists practicing in Pune
- Pharmacists involved in dispensing multivitamin supplements
- Respondents willing to participate voluntarily in the survey

Pharmacist Exclusion Criteria

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 04 July-August; 2026 Page. No. 612-630

• Pharmacists not involved in dispensing multivitamin products
• Incomplete survey responses
• Respondents unwilling to participate

4.4 Sample Size

The study included a total of 301 respondents, consisting of:
• 120 consumers using multivitamin supplements
• 181 pharmacists involved in dispensing multivitamin products

5. RESULT AND DISCUSSION

5.1 Consumer behavioral analysis

5.1.1 Frequency of Multivitamin Consumption

Consumption frequency was analyzed from the data of 120 respondents who reported current multivitamin use. This data revealed that the majority (n=60, 50%) consume multivitamins only when prescribed by a doctor or healthcare professional. 24.1% (n=29) take them rarely and 14.8%(n=18) consume them occasionally. Only the remaining 11.1% (n= 13) reported daily consumption of

multivitamins. Domination of prescription-based consumption shows that multivitamin use in the chosen population is more reactive. The low proportion of daily multivitamin users (11.1%) suggests that preventive supplementation is not yet practiced as a routine habit. There is a need for increasing awareness about the use and benefits of multivitamins to overcome the low proportion of daily users. At the same time, self-prescribing practices should be closely monitored since there is a wide availability of supplements in the Indian market and excessive use of multivitamins due to lack of adequate knowledge can lead to possible side effects or interactions.[24] For instance, various studies have reported increased risk of prostate cancer with Vitamin E supplementation and gastric upset caused by high doses of Vitamin C. [25,26]

5.1.2 Source of multivitamin recommendation

The source of multivitamin recommendation is a significant indicator of the consumer purchasing pattern. A very large number of respondents (n=96, 80%), reported that their primary source of recommendation was a doctor. Self-recommendation stood at 17.5% (n=21), while 15% (n=18) of the surveyed population consumed multivitamins on the recommendation of friends/family. Pharmacist recommendation was found to be comparatively low (n=13, 10.8%). The dominance of physician recommendations is a key characteristic of this dataset. This finding is consistent with existing research that practitioners are the primary source of recommending or advising against multivitamins to their patients.[27] The role of pharmacists appears to be underutilized, since only 10.8% consumers rely on pharmacist recommendation. This is particularly important because pharmacists are

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 04 July-August; 2026 Page. No. 612-630

strategically placed to advise the consumers and should possess extensive information regarding the possible drug interactions and suitable supplements. According to consumers perspective, pharmacists should undertake a consultative or advisory role and assist the consumers with all the necessary information regarding the product.[28] Limited pharmacist-led counselling in community settings or a lack of patient awareness of the pharmacist's advisory role in nutritional supplementation may explain the low figure.

5.1.3 Purpose of multivitamin consumption

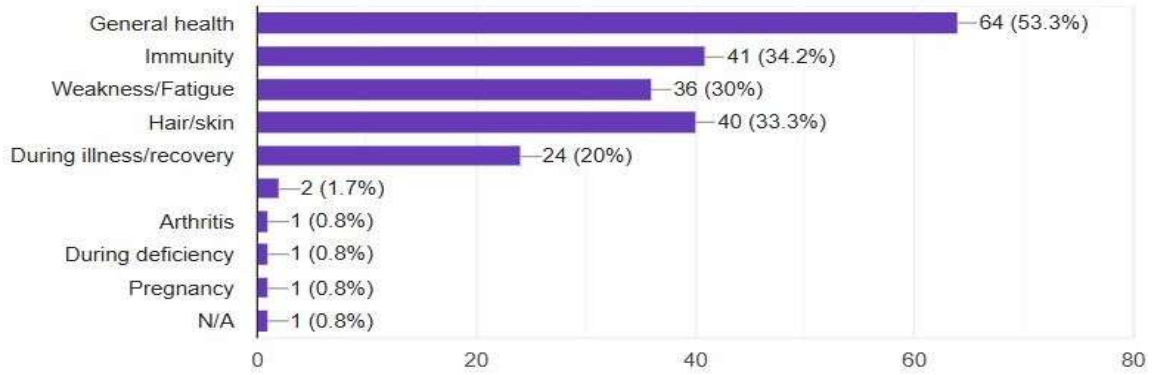

Figure 1: Purpose of multivitamin consumption among surveyed respondents

General health maintenance being the dominant purpose indicates a broad, nonspecific motivation for multivitamin consumption. This finding is similar to studies conducted by NHANES 2007-2010 and Council for Responsible Nutrition (CRN).[29-30] Priority for the respondents in these studies was maintaining general health. The significant number of participants citing immunity (34.2%) demonstrates an emerging trend among consumers towards prioritizing their immune system, which could have been spurred by the post-COVID-19 pandemic era.[31] The next common reason given was for hair and skin health. This illustrates a keen interest in aesthetic and cosmetic beauty, hence showing the growing trend of nutricosmetics. Hence a receptive audience might be found by companies that produce multivitamins with active ingredients for hair, skin and nails. There is increasingly high demand for these products, however, there is limited clinical evidence to support their use and consumers should know that the marketing claims such as “glow”, “beauty”, “skin,” etc. are not regulated and verified by testing agencies like USFDA.[32] The low levels of usage related to arthritis, deficiency, and pregnancy are likely because of the demographic make-up of the sample population rather than the lack of those ailments. This is consistent with the notion that multivitamin usage is for prevention purposes and well-being as opposed to therapeutic reasons.

5.1.4 Factors influencing multivitamin choice

87.5% of respondents (n=105) said that advice from a doctor was the most important factor in their

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 04 July-August; 2026 Page. No. 612-630

choice of multivitamin. Product composition was reported by 27.5% (n=33), followed by brand name at 15.8% (n=19), price at 8.3% (n=10), and advertising, which had a notably low representation at 2.5% (n=3). This is consistent with the finding that 50% of patients consume multivitamins only when prescribed by a doctor. This data also implies that in this consumer group, pharmaceutical marketing strategies and advertisements do not play a significant role in influencing patients' choice. Studies have revealed that consumers do not trust the information provided in supplement advertisements. Such advertisements are found to be inconsistent with the existing scientific facts and this has raised concerns regarding the ethical standards of marketing.[33] This suggests the need for better regulations and strict control over advertisements in order to strengthen evidence-based beliefs and promote responsible use.[33] Composition was found to be the influencing factor for 27.5% of the surveyed population. This is a promising finding, which implies that there is a considerable number of consumers who engage in well-informed choices while taking supplements. The influence of brand name (15.8%) and price (8.3%) was comparatively low, which suggests that these factors are secondary to doctor recommendation in the surveyed population. The lesser role of price in influencing decision-making shows that even though people are price-sensitive, the purchasing decision is made mainly on the basis of a recommendation from the doctor.

5.1.5 Preferred Dosage Form

The majority of respondents prefer tablet dosage form (58.3%, n=70), followed by capsules at 25.8% (n=31). 10.8% (n = 13) reported gummies as their preference and only 5% (n = 6) said that they consumed syrups. Preference for tablets is consistent with the well-known comfort level that exists with solid oral dosage forms within the pharmaceutical industry of India, wherein tablets remain the most widely dispensed and clinically accepted dosage form.[34] Gummies have become increasingly popular worldwide; however, the comparatively low proportion of consumers that prefer them indicates that the element of novelty associated with other forms of supplements has not yet been able to replace the traditional form of pharmaceuticals.

5.1.6 Monthly expenditure on multivitamins

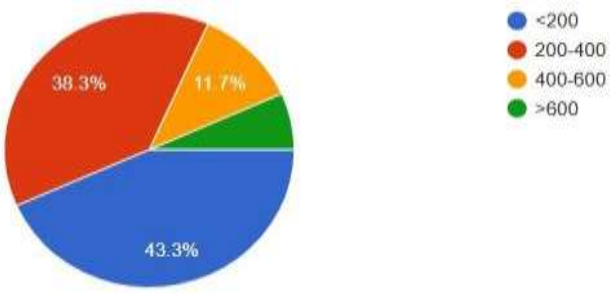

Figure 2: Monthly expenditure for multivitamins among surveyed respondents

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 04 July-August; 2026 Page. No. 612-630

Cumulatively, 81.6% (n=98) of respondents spend ₹400 or less, which indicates that these consumers are predominantly cost-sensitive and are concentrated in the economic segment of the multivitamin market. The highest proportion of consumers being in the below-₹200 bracket is a key finding. This spending pattern is consistent with the finding that multivitamin consumption in this population is episodic and significantly prescription driven. Thus, consumers who take multivitamins only when prescribed, won't invest heavily in daily regimens. Also, since a large proportion (53.3%) reported general health maintenance as their main purpose of consumption, it is unlikely that this population will purchase high-cost, specialized formulations, since the price of multivitamins has been reported to influence the willingness of consumers to buy them.[35] The negligible proportion of high spenders (6.7%) represents less involvement of this population in the premium segment of the multivitamin market. This implies that consumer willingness and motivation to actively spend on multivitamins on a long-term basis is low. This gap between available premium products and spending patterns of consumers represents a significant growth opportunity for the Indian nutraceutical market, when consumer health literacy grows and daily supplementation habits strengthen.

6. Statistical analysis of pharmacist dispensing patterns

6.1 Result of Cochran q test

Table 1. Cochran's Q Test for Frequently Dispensed Multivitamin Brands

Sr no.	Parameters	Values
1.	Number of brand categories (k)	6
2.	Sample size (n)	181
3.	Cochran's Q value	55.807
4.	Chi value (Tabulated)	11.07
5.	Degrees of freedom	5
6.	p-value	0.00000000008903
7.	Level of significance	0.05
8.	Interpretation	Significant

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 04 July-August; 2026 Page. No. 612-630

The obtained Cochran's Q value (55.81) was greater than the critical chi-square value (11.07). The p-value < 0.05, indicates statistically significant difference among the dispensing frequencies of the commonly reported multivitamin brands. Therefore, the null hypothesis which states that there is no significant difference between the groups was rejected.

6.2 Post Hoc Pairwise Comparison Using McNemar Test

Table 2: Pairwise Comparison of Frequently Dispensed Multivitamin Brand

Sr no.	Brand comparison	Adjusted Exact p-value	Interpretation
1.	Supradyn vs Zincovit	1.00000000	Not Significant
2.	Supradyn vs A to Z	1.00000000	Not Significant
3.	Supradyn vs Maxirich	0.00735237	Not Significant
4.	Supradyn vs Bevon	0.00000000	Significant
5.	Supradyn vs Others	1.00000000	Not Significant
6.	Zincovit vs A to Z	1.00000000	Not Significant
7.	Zincovit vs Maxirich	0.37119054	Not Significant
8.	Zincovit vs Bevon	0.00000079	Significant
9.	Zincovit vs Others	1.00000000	Not Significant
10.	A to Z vs Maxirich	0.75678615	Not Significant
11.	A to Z vs Bevon	0.00000020	Significant
12.	A to Z vs Others	1.00000000	Not Significant
13.	Maxirich vs Bevon	0.00646286	Not Significant
14.	Maxirich vs Others	0.04414141	Not Significant
15.	Bevon vs Others	0.00000004	Significant

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 04 July-August; 2026 Page. No. 612-630

McNemar post hic test shows a significant difference between Bevon and Supradyn, Zincovit, A to Z, and Others ($p < 0.0033$). There was no significant difference for all other brand comparisons ($p > 0.0033$). It shows that there is similarity in the frequency of distribution among all other brand comparisons.

7. Descriptive Analysis of Pharmacist Survey Responses

7.1 Demographic Characteristics of Pharmacists

In this survey 44.2% (n= 80) of the pharmacists had experience ranging from 1 to 5 years, with 34.3% (n=62) having an experience range of 6-10 years and 17.7 % (n=32) pharmacists had experience of more than ten years. Among them 90.6% (n=164) of the pharmacists were working in retail pharmacies indicating that the findings mainly reflect retail pharmacy practices and consumer interactions.

7.2 Dispensing practices and consumer demand

According to 69.6% (n=126) of pharmacists in this survey multivitamins were dispensed through both prescription and OTC, while 21.5% (n=39) considered them mainly prescription-based, and 8.8% (n=16) as OTC. A substantial proportion of pharmacists, about 78.5%, (n=142) reported frequent consumer demand for multivitamins indicating very frequent demand.

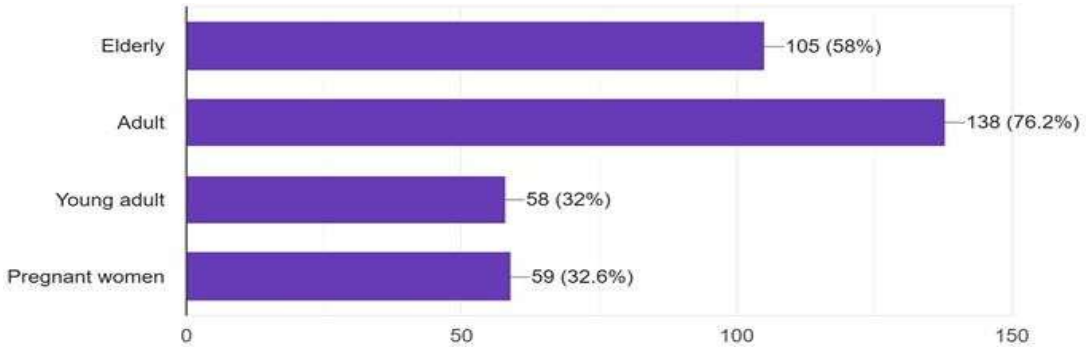

Figure 3: Categories of customers purchasing multivitamins

7.3 Market trends and sales pattern

About 72.9% (n=132) pharmacists reported an increase in multivitamin usage over the years with 21% (n=38) not sure and rest stating no. 85.1% (n=154) of pharmacists reported that doctor's recommendation and promotional activities were identified as a major factor influencing multivitamin sales while 28.2% (n=51) stated that brand awareness also played a role in customer purchasing decisions. Around 91.7% (n=166) pharmacists stated tablets were most commonly dispensed

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 04 July-August; 2026 Page. No. 612-630

formulation followed by capsule (46.4%, n=84), syrups (28.7%, n=52) and gummies (7.7%, n=14).

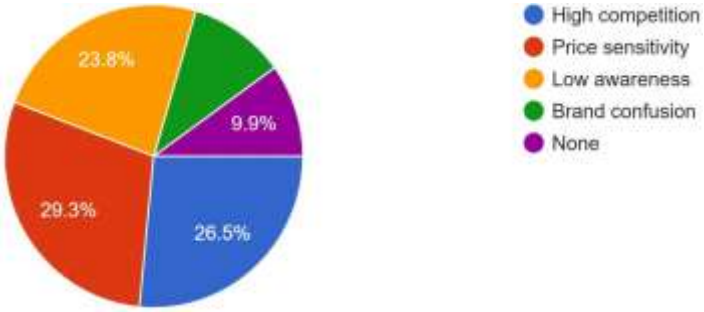

Figure 4: Challenges affecting multivitamin sales

7.4 Professional recommendation practices

In this survey 69.6% (n=126) pharmacists stated, they actively recommended multivitamin products to patients and 30.4%(n=55) stated they don't. Around 50.8% (n=92) pharmacists stated that consumers asked for specific multivitamin brands indicating a moderate level of consumer brand awareness and preference within the multivitamin market.

8. SWOT ANALYSIS

STRENGTHS

The first major advantage possessed by Supradyn, Zincovit, A to Z, and Maxirich is the robust connection with pharmaceutical companies and reputation in the market. This makes it easier for pharmacists to recommend them since Indian consumers trust pharma-endorsed supplements more than any other brand. Another significant strength is their broad-spectrum formulations, which generally include combinations of B-complex vitamins, vitamin C and D, zinc and trace minerals, antioxidants and amino acids (in some formulations). Research has shown that these micronutrients are frequently deficient in the diets of many people in India, particularly urban workers and senior citizens, who tend to have low amounts of Vitamin B12 & D, iron, and zinc.[36] Thus, these companies can position themselves as a solution for fatigue, weakness, stress, etc. Consumer reviews from online platforms further reinforce these strengths. Supradyn and Maxirich consistently maintain high ratings on Amazon and Tata 1mg, generally ranging from 4.2–4.5/5, with users frequently reporting improved energy levels, better immunity, affordable pricing and ease of availability.[37] Maxirich, specifically, is also advantaged by having high perceptions of affordability and is consistently referred to as a "good daily multivitamin that is reasonably priced."[38] Zincovit is frequently recommended by pharmacists due to its strong link to immunity and zinc intake. Likewise, Supradyn is frequently recognized as a "regular daily multivitamin." Their presence in many retail stores is another group advantage. Moreover, most consumers keep consuming the supplements due to their benefits or physician/pharmacist advice.

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 04 July-August; 2026 Page. No. 612-630

WEAKNESSES

Despite their commercial success, these multivitamins have some drawbacks that have been highlighted by consumer feedback and research. Firstly, the drawback that is present in all four types is the presence of gastrointestinal reactions such as acidity, nausea, gastric irritation, bloating and diarrhea for sensitive people. Supradyn and A to Z vitamin consumers have reported stomach problems due to consumption of these vitamins.[39] The adverse effects are pharmacologically justified since multivitamins may often include iron salts, zinc, magnesium and high dose B-vitamins that could cause irritation of the stomach lining, particularly if taken on an empty stomach. A critical problem that affects all brands reviewed is that of bioavailability and lack of adequate dosing. According to independent studies conducted on supplements, there is an indication that some supplements, including the newest version of Supradyn, have ingredients at RDA levels rather than therapeutic ones. Thus, the difference between expected outcomes ("energy booster," "immune support") and clinical effectiveness is evident.[40] Additionally, the four brands suffer from a problem shared by all multivitamins: scientific uncertainty about the benefits of such supplements for healthy people. According to analysis in reputable journals like JAMA and USPSTF reviews, taking multivitamins regularly cannot lower the risk of developing chronic diseases in healthy patients. [41,42] Another issue is its failure to personalize. Some trends in modern nutrition involve gender specific formulation, supplements tailored for particular illnesses, age-appropriate products, etc. However, the multivitamins under discussion seem to have a generalized formula that works for everyone.

OPPORTUNITIES

The Indian nutraceutical and preventive healthcare market offers immense potential for the four brands of multi-vitamins. The rise in health consciousness post-COVID has led to a significant behavioral shift towards preventive supplementation, immune boosting and wellness products. This trend suits Zincovit and Supradyn as they have strong immune boosting positioning. A significant opportunity is the segmenting of the product range to venture into women's health multivitamins, geriatric multivitamins, Sports nutrition, for stress management and cognitive function and PCOS specific nutrition. Supradyn has already made its way into the field of targeted supplementation by launching variants having ginseng and other plant extracts.[40] The other big opportunity is the rise of digital pharmacies and healthcare ecosystems on e-commerce platforms such as Tata 1mg, Amazon, PharmEasy, and Flipkart. Another promising avenue of growth lies in the OTC market dominated by pharmacists. With retail pharmacists becoming primary healthcare advisors in India, these brands can benefit from enhancing their pharmacist engagement efforts. In terms of research, there is huge scope for conducting: India-specific clinical trials, real-world evidence studies and comparative efficacy studies. This would help position these brands more effectively in an increasingly competitive market

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Vol. 8, No. 04 July-August; 2026 Page. No. 612-630

environment.

THREATS

A serious collective threat that is present for Supradyn, Zincovit, A to Z, and Maxirich is competition in the multivitamin market.[43] At the moment, the supplement industry in India contains multivitamins produced by pharmaceutical companies, nutraceuticals from other countries, herbal supplements, ayurvedic products, sports nutrition brands and personalized nutrition brands. In addition, some of the newer brands are characterized as being natural, organic, high absorption, sugar-free and clinically dosed. These supplements might appeal more to young people who care about their health. Furthermore, the growing skepticism regarding daily consumption of multivitamins poses a significant threat to all brands. Nowadays, many people read articles in which it is mentioned that supplements should not be used instead of foods, blood tests should be made before taking multivitamins and overuse of multivitamins is not necessary. All this can lead to fewer purchases of these supplements. Moreover, new supplements, which highlight the increased bioavailability of their components, may become a competitive barrier for existing supplements on the market since consumers become more aware of such characteristics. Finally, regulatory ambiguity in India between pharmaceuticals and nutraceuticals creates a highly competitive environment where aggressive health claims can be made by less-regulated competitors, intensifying market pressure on established brands.[44]

CONCLUSION:

The surveyed population is at an early stage of the supplementation adoption curve. Prescription-based demand has a great impact on consumer behaviour and the choice of multivitamin brands. Pharmacist counselling should be improved to raise awareness about the safe and rational consumption of multivitamins. According to statistical analysis, there exists a significant difference between major multivitamin brands such as Supradyn, Zincovit, A to Z, Maxirich, and others when compared with Bevon. However, it is worth mentioning that the “Others” category includes several multivitamin brands that were pooled together for the purpose of making the data more comprehensible from a statistical perspective. Based on the findings obtained above, it can be concluded that Supradyn, Zincovit, A to Z, and Maxirich possess higher market penetration and greater brand loyalty among consumers. This can be explained by the fact that these multivitamin brands are often prescribed by doctors, thereby improving consumer awareness and creating trust in the product. In order to increase the market penetration of emerging multivitamin brands, it would be beneficial to focus on marketing strategies that include promoting the products through medical representatives to doctors and pharmacists. Other important ways through which market penetration for the new brands could be increased are by focusing on targeted marketing and advertising through digital marketing techniques and social media campaigns.

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ISSN 2582-2292

Vol. 8, No. 04 July-August; 2026 Page. No. 612-630

ETHICAL CONSIDERATIONS

Voluntary participation was ensured in this research study. The respondents were acquainted with the objectives and aims of the study prior to data collection. Participants' confidentiality and anonymity were preserved throughout the research, and data collected was used for research and academic purposes alone.

STUDY LIMITATIONS

- The study was limited to selected regions of Pune city.
- Consumer responses were collected through self-reported online questionnaires, which may involve response bias.
- The study sample size and duration were limited.
- Pharmacist responses depended on availability and willingness to participate during personal visits.
- Statistical analysis was performed using Microsoft Excel only.

CONFLICT OF INTEREST

The authors have no conflicts of interest regarding this investigation.

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