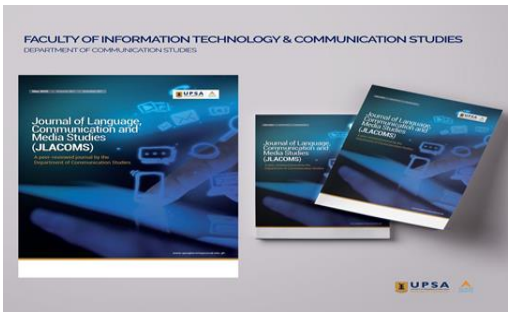

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Blending Trends in Pharmaceutical Product Names in Ghana: A Pharmaco-Onomastic Study

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ABSTRACT

The Pharmacy Council of Ghana mandates that medicine brand names reflect their active ingredients to communicate composition and therapeutic effects effectively. This framework encourages word-formation processes, particularly blending, in pharmaceutical naming. However, the blending strategies used by Ghanaian pharmaceutical companies often diverge from traditional linguistic norms. This study explores the blending trends in medicine brand names, aiming to identify types of blends and evaluate their effectiveness in conveying product composition to users. Data was sourced from locally manufactured medicines registered with the Food and Drugs Authority of Ghana, focusing specifically on brand names created through blending. The analysis revealed various blending types, such as acronyms, initialisms, initial-syllabic blends, and others, with initial-syllabic blending being the most common and effective in communicating ingredient information. Nonetheless, some blending practices obscure meanings, potentially leading to confusion and medication errors. The study recommends establishing a national pharmaceutical naming policy to standardize blending patterns, align linguistic practices with regulatory and patient-safety goals, enhance drug identification, improve public understanding, and reinforce existing pharmaceutical regulations in Ghana.

Keywords: *brand naming, blending, pharmaco-onomastics, morphology, pharmaceutical nomenclature*

1. Introduction

Life is a creative space where ideas are transformed into creations, which evolve into the products and services that shape our reality. These products and services are then turned into the jobs we engage in either temporarily or permanently for our daily survival. While some businesses are the sole producers of some products and services others are in serious competitions and require branding to distinguish one from another to harness customer attraction and retention. In the highly competitive business world, attracting customers is not merely important but essential for the survival and growth of any business. A strong customer base drives revenue, enhances brand reputation, and provides opportunities for expansion (Smith, 2021; Johnson & Lee, 2020; Brown et al., 2019). Therefore, the hallmark of every business is to employ effective marketing strategies, offer exceptional customer service, and innovate continually to stand out in a crowded marketplace (Garcia & Thomas, 2018; Patel, 2020; Nguyen et al., 2021).

According to Keller (2013) the effective marketing strategy that can be used to create a unique identity for a product or company, differentiate it from competitors, and establish an emotional connection with the target audience is branding. Kotler and Keller (2016) define branding as the process of creating a unique identity for a business, product, or service through names, logos, designs, and messaging that differentiate the business from competitors and build a lasting impression on consumers. As such, businesses, if not all, brand their products and services to mark identities for their products in the marketplace. This is a way of communicating about the product to customers. The pharmaceutical industry is one business enterprise that brands its products and services using specific names. Pharmaceutical branding in Europe involves a balance of scientific accuracy, regulatory adherence, cultural sensitivity, and strategic marketing to ensure that products resonate with both healthcare professionals and patients (Wismayer, 2023). In America for instance, pharmaceutical branding is a complex and regulated activity that requires balancing commercial goals with ethical responsibilities and legal constraints to foster a relationship of trust with consumers and healthcare professionals alike (Petryna, Kleinman, & Lakoff, 2006). In both regions, effective pharmaceutical branding hinges on navigating regulatory, ethical, and cultural factors to build trust and ensure successful market positioning.

The pharmaceutical industry depends on brand names to effectively distinguish medications and their respective manufacturers. However, the naming of pharmaceutical brands presents significant challenges in terms of clarity, safety, and communication. In particular, the similarity between brand names can lead to misidentification, misprescription, and incorrect dispensing of medications, all of which pose serious risks to patient safety. This issue becomes even more critical in high-pressure healthcare environments where time constraints and communication breakdowns can amplify the likelihood of errors. Patients, pharmacists, doctors, and nurses play pivotal roles in the medication administration process. However, the similarity in the names of different medications, whether due to spelling, pronunciation, or visual appearance, can result in confusion and errors. For instance, a drug with a name that is phonetically similar to another may cause a pharmacist to dispense the wrong medication, or a doctor might mistakenly prescribe the wrong drug due to a misunderstanding of the name. Likewise, nurses could misinterpret a brand name and administer an incorrect drug, potentially leading to harmful side effects or adverse reactions.

Additionally, the global reach of the pharmaceutical industry introduces another layer of complexity, where medications with similar names may be marketed across different regions or countries, heightening the risk of cross-border confusion. Therefore, it is imperative that pharmaceutical companies carefully craft and distinguish brand names to minimize the potential for such errors, while enhancing communication between healthcare providers and patients. One of the key factors contributing to brand name confusion is the morphological processes involved in pharmaceutical brand naming. These processes, including *derivation*, *compounding*, *blending*, and *clipping*, often influence the way drug names are formed. For example, a brand name derived from Latin or Greek roots may look and sound similar to another name with the same linguistic origins, increasing the chances of misinterpretation. Similarly, compounding two or more words into a single name, or blending parts of existing names, can create unintended similarities with other drugs, especially when names are shortened or clipped for ease of use.

In Ghana, the government plays an active role in regulating the pharmaceutical sector to ensure that both locally produced and imported medications meet established safety and quality standards.

This regulation is guided by a legal framework that includes key legislation such as the Food and Drugs Law (PNDCL 305B) and the Pharmacy Act (Act 489), which govern the proper labeling, advertising, and sale of medicines. Pharmaceutical brand names, whether local or international, are influenced by regulatory, ethical, and cultural factors. However, the specific morphological patterns used in the formation of these brand names remain largely unexplored. The aim of this research is to investigate the naming conventions used in Ghana's pharmaceutical sector, with particular attention to the morphological processes employed by pharmaceutical companies. By examining how the structure and formation of brand names contribute to either confusion or clarity, the study seeks to uncover the naming patterns that arise within the context of regulatory compliance. The ultimate goal is to propose improvements to naming practices that can reduce the risk of medication errors and support safer healthcare outcomes for patients and healthcare professionals.

2. Literature review

Naming of products and services is a common phenomenon among industries and companies because the names articulate the products' salient physical, functional, or performance characteristics (Ahonen, 2008; Schooner, 2020). This practice not only aids in distinguishing one product from another but also serves as a strategic tool for branding and marketing. By embedding key attributes into the names, companies enhance consumer recognition and understanding of the product's value proposition, ultimately influencing purchasing decisions. For instance, names that highlight durability, efficiency, or innovation can attract specific target audiences and create lasting impressions in competitive markets.

Cheramakara et al. (2020) note that product names often fall into distinct categories based on their stylistic and functional attributes. First of all, descriptive names provide clear and direct information about the product's nature or purpose, making them immediately recognizable to consumers. Furthermore, associative or suggestive names, on the other hand, evoke certain qualities, emotions, or ideas linked to the product, creating a deeper connection with the target audience. In addition, deviant or arbitrary names, which may appear unconventional or unrelated to the product, rely on their uniqueness to capture attention and stand out in the market. Lastly, fanciful names are entirely invented or imaginative, offering a creative and memorable identity that differentiates the product

from competitors.

Products such as alcoholic beverages, fruit juices, agro-chemicals, cosmetics, and others are often named using the approaches outlined by Cheramakara et al. (2020). For instance, descriptive names like "Fresh Harvest Juice" clearly communicate the product's natural and refreshing qualities, while associative names such as "Eternal Glow" for a cosmetic product evoke feelings of beauty and timelessness. Deviant names, such as "Zazzle" for an energy drink, rely on their unconventionality to grab attention and foster curiosity. Similarly, fanciful names like "Agronix" for an agro-chemical create a unique and memorable identity that sets the product apart in a competitive market. These naming strategies not only highlight key attributes but also enhance brand appeal and consumer connection.

Just as alcoholic beverages, fruit juices, agro-chemicals, cosmetics, and others are often named using the approaches outlined by Cheramakara et al. (2020), pharmaceutical products are also named based on specific conventions. The European Pharmaceutical Agency, for instance, has established guidelines requiring medicines with similar actions to have similar-sounding generic names. This practice helps healthcare professionals and consumers identify related drugs within the same therapeutic category. For example, phenoxymethylpenicillin, ampicillin, amoxicillin, and flucloxacillin all belong to the group of antibiotics, as noted by Sambrook (2017) and Manzoli et al. (2016). Such naming conventions not only facilitate accurate prescribing and dispensing but also enhance the understanding of drug functionality and classification.

The pharmaceutical product naming system encompasses two primary patterns: the universally recognized generic naming system and the non-universal brand naming system. Generic names serve as the scientific or official designation of a product and are standardized for global recognition. These names are assigned by authoritative bodies such as the United States Adopted Names (USAN) Council, the American Medical Association (AMA), the United States Pharmacopeial Convention (USP), and the American Pharmacists Association (APhA). This ensures consistency and clarity in identifying pharmaceutical substances worldwide. In contrast, brand names are proprietary or trademarked names created by manufacturers, often introduced after the generic product has been on the market for several years. As noted by Keenum et al. (2012), Schwartz (2012), Gagne et al. (2014), and Desai et al. (2019), brand names are designed to establish

a unique identity for the product, enhancing its market appeal and differentiation. Together, these naming systems facilitate both scientific precision and commercial branding in the pharmaceutical industry.

Brand naming consists of three essential components: the market component, the legal component, and the linguistic component, each of which imposes specific requirements when creating a new brand (Shevliakova, 2020). The market component necessitates that a brand name be suggestive of the product's productive benefits, and allowing consumers to easily associate the name with the value it offers. The legal component ensures that the brand name is legally available and unique, preventing conflicts with existing trademarks and safeguarding the brand's identity. The linguistic component is further divided into three parts: phonetically, the brand should be easy to pronounce and pleasant to hear, ensuring that it resonates well with consumers; morphologically, the name should be short and simple, making it easy to remember and recognize; and semantically, the brand should carry a positive connotation, evoking favourable associations that enhance its appeal. These components work together to create a brand name that is not only legally protected but also effective in capturing the attention and trust of the target market.

Therefore, pharmaceutical product names are typically constructed using a variety of morphemes or affixes, each serving a specific communicative purpose. These linguistic elements often provide valuable information to users about the drug's composition, its intended effects, and the conditions it is designed to treat. For example, prefixes or suffixes like "-cillin" in antibiotics or "-statin" in cholesterol-lowering drugs indicate their therapeutic class and function. This systematic use of morphemes not only aids in the accurate identification of medications but also enhances understanding among healthcare professionals and patients, ensuring the effective use of the drugs for their intended purposes.

In traditional grammar, the morphemic structure of a word consists of meaningful segmental components, primarily root morphemes (roots) and affixal morphemes (affixes). These components form the foundation for various word-formation patterns that contribute to the dynamic evolution of language. According to Yule (1985), these patterns include coinage, where entirely new words are invented, often for branding or technological innovations; borrowing, which involves adopting words from other languages; and compounding, where two or more independent words are

combined to create a new term, such as "notebook." Other processes include blending, which merges parts of words, as seen in "brunch" (breakfast + lunch), and clipping, where words are shortened, like "ad" from "advertisement." Back-formation involves creating a new word by removing an affix, such as "edit" from "editor," while conversion changes a word's grammatical category without altering its form, as in the noun "email" becoming a verb. Additionally, acronyms form new terms from the initial letters of a phrase, such as "NASA," and derivation uses prefixes and suffixes to modify the meaning or category of a root word, like "unhappy" or "happiness." These processes illustrate the flexibility of morphemic structures in generating an ever-expanding vocabulary.

Snodin et al. (2017) claim that names are a crucial element of brand communication, as they serve as the initial point of contact through which customers can perceive key product information. The brand name acts as a gateway, offering consumers immediate insights into the product's identity, purpose, and value proposition. A well-chosen name can effectively convey essential attributes, such as quality, function, or uniqueness, which can influence consumer perceptions and purchasing decisions. By capturing attention and evoking the right associations, a brand name sets the tone for the customer’s experience with the product, making it an essential tool in shaping the overall brand narrative.

The study by Pamungkas and Abdulah (2017) highlights the significance of linguistic principles, particularly morphology, in the naming of over-the-counter pharmaceutical products in Indonesia. The research reveals that morphological strategies such as compounding, affixation, and abbreviation are commonly employed in creating product names. These linguistic techniques not only serve to communicate essential information about the product’s function, composition, or benefits but also aim to enhance consumer recognition and recall. By examining the morphological structures of these names, the study underscores the role of language in shaping consumer perceptions and the overall effectiveness of pharmaceutical branding.

Mends (2017) and Haryati (2014) conducted investigations into the Word Formation Processes (WFP) used in food and beverage product names in Ghana and Indonesia, respectively. Mends' study explored how various linguistic strategies, such as compounding, blending, and abbreviation, were employed in Ghana to create memorable and marketable product names. Similarly, Haryati's research in Indonesia focused on the linguistic methods used to form food and beverage names,

highlighting the role of cultural influences and language patterns in shaping consumer perceptions. Both studies provide valuable insights into how word formation processes are adapted to local markets, demonstrating the importance of linguistic creativity in product branding across different cultural contexts.

Tian et al. (2020) analysed the extent to which patients were adherent to generic statins compared to brand-name statins, specifically lovastatin, pravastatin, and simvastatin, and examined whether greater adherence to these medications led to improved health outcomes. The study found that while patients generally showed similar adherence levels to both generic and brand-name statins, those who adhered more consistently to their prescribed medication regimen experienced better health outcomes, including improved cholesterol control. This research highlights the importance of medication adherence in managing chronic conditions and suggests that consistent use of statins, regardless of whether they are generic or brand-name, plays a crucial role in achieving optimal health results.

Schwartz et al. (2012) examined the warning notice issued to the public when consumers began shifting liability to manufacturers of brand-name medicines, alleging that harm caused by generic drugs with severe side effects should be the responsibility of the original manufacturers. The study explored the legal and ethical implications of this shift, focusing on the complexities of drug liability and the challenges faced by brand-name manufacturers when their generic counterparts were linked to adverse health outcomes. Schwartz et al. (2012) emphasized the importance of clear communication and regulatory oversight in ensuring that both brand-name and generic drug manufacturers are held accountable for the safety of their products, regardless of their market origin.

While previous studies like Schwartz et al. (2012), Haryati (2014), Pamungkas and Abdulah (2017), Mends (2017), Tian et al. (2020), have contributed valuable insights into the linguistic strategies used in product naming and the implications of generic versus brand-name products, there remains a gap in understanding the specific impact of blending trends in pharmaceutical brand naming, particularly within the Ghanaian context. While Pamungkas and Abdulah's research sheds light on the use of morphological strategies in naming over-the-counter medications, and studies by Mends and Haryati explore word formation processes in food and beverage industries, these studies do

not address how blending, as a linguistic strategy, is employed in the naming of pharmaceutical products in Ghana. Furthermore, while Schwartz et al. (2012) and Tian et al. (2020) focus on the effects of adherence and liability in pharmaceutical products, they do not consider how blending trends in drug names might influence consumer perceptions, trust, and health outcomes. This gap in knowledge highlights the need for further research that specifically examines the blending trends in the brand naming of medicines by Ghanaian pharmaceutical companies and their potential impact on consumer decision-making, trust, and adherence to prescribed medications.

4.1 Theoretical framework

Katamba's (1986, 1993) theory of Lexical Morphology (LM) was chosen for this study due to its strong foundations in Generative Grammar (GG), a linguistic model advanced by Chomsky (1957). This theory provides a framework for understanding the structure of words by breaking them down into their constituent lexical units. LM operates within the broader scope of GG, which posits that the human mind has an inherent capacity to generate an infinite number of words. The application of LM in this study aims to explore how these generative capabilities can be systematically analyzed and represented.

LM is primarily concerned with the morphological analysis of words, where it decomposes words into functionally meaningful lexical units. These units, often referred to as morphemes, are the smallest meaningful components of language. Through LM, these units are examined to uncover their grammatical meanings, which are crucial for understanding the syntactic and semantic properties of words. This approach allows for a detailed examination of word formation processes and their relation to sentence structure and meaning, providing a comprehensive tool for morphological analysis.

In line with the principles of Generative Grammar, LM focuses on the idea that the human mind can generate an infinite number of word forms. The core objective of LM is to analyze these word forms by developing a set of rules that govern their structure and formation. By doing so, LM offers insights into how language users mentally construct words and how these constructions fit into the broader syntactic and semantic systems of a language. This theoretical approach is particularly

useful for understanding the complexities of word formation and the underlying cognitive processes involved in language production.

3. Methodology

3.1 Research Methods

This research adopts a qualitative research method which involves techniques aimed at examining lived experiences, social dynamics, and contextual meanings (Punch, 2020). Creswell (2018) notes that this approach is especially effective for exploring complex issues that are not easily measurable. The qualitative method is particularly useful for this study as it allows for a detailed investigation into the naming conventions of pharmaceutical products in Ghana. It facilitates the identification of underlying morphological patterns, as well as the cultural, regulatory, and ethical factors that influence brand naming. This design also enables the exploration of how these naming practices affect consumer perception, trust, and medication adherence, insights that are best captured through rich, contextual data rather than numerical analysis.

5.2 *Data site, population and sample size*

The data for this study comprised primarily orthodox (conventional) medicines manufactured both locally and internationally. The names of the orthodox medicines were collected from the website of the Food and Drugs Authority (FDA) of Ghana, the regulatory agency responsible for overseeing the registration of pharmaceutical products before they are sold in the country. The research focused on all pharmaceutical drugs registered in the 2010-2020 database of the Food and Drugs Authority (FDA) in Ghana. A sample of 397 pharmaceutical product names was selected from a large population of registered medicines for analysis using purposive sampling. This approach was chosen because it allows for the intentional selection of products that meet the specific criteria relevant to the study, ensuring that only those directly related to the research question were included. By targeting products that fit these criteria, purposive sampling enhanced the precision and relevance of the findings. In this case, only product names that were formed through blending, a word formation process, were considered.

3.2 Mode of analysis

The study employed Katamba's Lexical Morphology (LM) theory as the primary analytical lens. This theory holds that the human mind can generate an infinite number of word forms by applying morphological rules systematically. Central to Katamba's framework is the idea that word formation occurs in structured layers, where different morphological processes operate at different levels. This layered nature of word formation aligns with the process of constructing pharmaceutical brand names, particularly through blending, as each new form may reflect the combination of morphemes from different strata. The researchers collected and grouped pharmaceutical brand names according to observable linguistic patterns, using this theoretical model to trace the morphological layers that contributed to the final forms.

A crucial element of this analysis was the connection between Lexical Morphology and syllabic structure in word formation. Katamba's theory emphasizes the phonological dimension of morphology, making syllables a significant unit of analysis. In blending, portions of source words, often whole syllables or strategic syllabic fragments, are fused to create new brand names. By examining how syllables were retained, altered, or truncated during blending, the study uncovered patterns in how phonological units contribute to morphological innovation. This syllabic manipulation was not random but followed identifiable rules, supporting the notion that blending operates within layered morphological constraints.

Through this layered and syllable aware approach, the researchers were able to classify brand names not just by their semantic or functional features but also by how the structural layering and syllabic composition contributed to their formation. The study quantified occurrences of specific blending patterns and related these to both phonological clarity and consumer appeal. In doing so, the analysis highlighted how pharmaceutical companies strategically apply layered morphological processes, rooted in syllable manipulation and guided by Katamba's theory, to generate brand names that are structurally sound, linguistically innovative, and commercially effective.

4. Results and Discussions

The analysis is structured into two key strands. The first strand focuses on identifying and categorizing the blending types used in the formation of medicine brand names. This aspect

examines the linguistic techniques and patterns employed in creating these names, highlighting how elements of different words are combined to form meaningful and appealing brand identities. The second strand explores the functional contributions of these blending types, particularly their role in effectively communicating the contents, purposes, or benefits of the medicines to consumers. These two strands are interconnected, with the first providing a foundational understanding of the blending processes, while the second evaluates their practical implications.

Blending types of medicine brand names of Ghanaian pharmaceutical companies

Teasing out the blending types from the registered medicine brand names in the databases of the Food and Drugs Authority of Ghana, the researchers discovered blending patterns labelled as: (i) Initial blend, (ii) Initial +initial + initial syllabic blends, (iii) Initial syllabic + initial syllabic blends, (iv) Initial syllabic + medial syllabic blends, (v) Initial syllabic + final syllabic blends and (vi) Final syllabic + final syllabic blends. Table 1 projects the types of blending in the medicine brand names and their respective frequencies.

Table 1: Blending types of medicine brand names of Ghanaian pharmaceutical companies

Blending type	Frequency	Percentage
Initial Blend	63	15.9
Initial +initial + initial syllabic blends	48	12.1
Initial syllabic + initial syllabic blends	87	21.9
Initial syllabic + medial syllabic blends	72	18.1
Initial syllabic + final syllabic blends	68	17.1
Final syllabic + final syllabic blends	59	14.9
Total	397	100

Source: Drugs registered in the Database of the Food and Drugs Authority of Ghana between 2010 and 2020 (2020)

Initial Blend pattern of pharmaceutical brand names

The first classification of the blending type that has been teased out from the data was labelled *initial blend*. This class of medicine brand names comprises the formation of the brand names using the initials of the ingredients, dosage types, local manufacturer, and foreign manufacturer or something else.

Table 2: The contents of Initial Blend medicine brand names

Brand Name	Ingredients	Dosage type	Local manufacturer	Foreign manufacturer

GML	Amino Acids, Minerals, Multivitamins	Syrup	Geo Medicore Limited	Geo Pharmacy
AL-DS	Artemether, Lumefantrine	Tablet Oral	Kofikrom Pharmacy Limited	Centurion Laboratories, Div of Centurion Remedies Pvt Ltd

Source: *Drugs registered in the Database of the Food and Drugs Authority of Ghana between 2010 and 2020 (2020)*

The study sought to identify *morpheme blending* in pharmaceutical brand names by showing how segments of different linguistic and informational sources (ingredients, manufacturer identity, and dosage form) are compressed into short, hybrid forms such as **GML** and **AL-DS**.

1. GML (Geo Medicore Limited / Geo Pharmacy)

In this case, the brand name **GML** is best interpreted as an *initialism-based blend*. The morphemic structure is formed by taking the initial letters of the manufacturer identity:

G → Geo

M → Medicore

L → Limited

This represents a form of *acronymic condensation*, where a longer institutional name is reduced to a compact lexical item. Although not a "blend" in the classical sense (like merging syllables from two words), it functions as morphemic compression because meaningful linguistic units (company name components) are selectively extracted and recombined into a pronounceable or semi-pronounceable label.

The presence of "Geo Pharmacy" as a foreign manufacturer reinforces that the naming strategy prioritizes corporate identity rather than pharmacological content, with morphemes drawn from proper nouns.

2. AL-DS (Artemether + Lumefantrine / Double Strength)

The brand name **AL-DS** represents a clear example of multi-source morphemic blending in pharmaceutical nomenclature, where abbreviated morphemes from different semantic and functional domains are combined to produce a concise but information-rich pharmaceutical label. The structure integrates ingredient-based initials with a dosage-strength marker, allowing the

product name to communicate both therapeutic composition and formulation potency simultaneously.

Blending identification:

AL → derived from the initials of the active ingredients:

A → Artemether

L → Lumefantrine

DS → "Double Strength" (standard pharmaceutical dosage abbreviation)

The brand name combines morphemes from two distinct semantic domains: Pharmacological domain → represented by **AL**, which identifies the active antimalarial ingredients Artemether and Lumefantrine, that is, dosage specification domain → represented by **DS**, indicating a higher-strength or double-dose formulation.

The resulting structure is therefore not a simple lexical blend but a hybrid pharmaceutical construction that merges: **Ingredient-based initialism**, and **Dosage morphology**.

This type of naming strategy is particularly common in pharmaceutical branding because it achieves several communicative functions simultaneously:

It provides rapid identification of the active therapeutic compounds

It distinguishes the formulation strength from standard variants

It enhances prescribing and dispensing clarity in clinical settings

It creates a compact and memorable commercial identity

Consequently, **AL-DS** functions as a compressed pharmaceutical code in which therapeutic composition and dosage intensity are linguistically fused into a single marketable brand expression.

The analysis of pharmaceutical brand names such as GML and AL DS demonstrates an important trend in pharmaceutical nomenclature. Manufacturers increasingly use morphemic compression, abbreviation, and hybrid blending to create short, marketable, and information rich product names. These naming strategies combine fragments from different semantic sources including manufacturer identity, pharmacological ingredients, and dosage specifications into compact lexical forms. While this trend offers communicative and commercial advantages, it also introduces important concerns relating to ambiguity, medication safety, and consumer misunderstanding.

One major concern is that highly compressed pharmaceutical names may become misleading or confusing, especially for patients, caregivers, and even healthcare professionals working in fast paced clinical environments. In names such as GML, the morphemic structure emphasizes corporate identity rather than pharmacological meaning. The initials GML provide little or no immediate indication of the medicine's therapeutic class, active ingredients, dosage form, or intended use. Unless the user already possesses contextual knowledge of the manufacturer, the brand name functions as an opaque linguistic code rather than an informative medical label. This creates the possibility of medication confusion, particularly in multilingual healthcare settings or among patients with limited health literacy.

Similarly, abbreviated blends such as AL DS may generate interpretive uncertainty despite their apparent efficiency. Although AL refers to Artemether and Lumefantrine while DS conventionally means Double Strength, these abbreviations depend heavily on professional pharmaceutical knowledge for correct interpretation. For trained pharmacists and clinicians, the meaning may appear relatively transparent. However, for non-specialist users, the compressed structure may obscure critical dosage distinctions. A patient may fail to recognize that DS indicates increased potency and could mistakenly substitute it for a regular formulation. Such misunderstanding may result in overdose, underdose, or inappropriate administration.

Another misleading aspect of these naming strategies is that commercial branding sometimes overshadows pharmacological transparency. In some cases, corporate identity markers dominate the lexical structure more strongly than ingredient identity, as seen in names derived mainly from manufacturer initials or company fragments. This can transform pharmaceutical names into branding tools rather than informative therapeutic descriptors. Consequently, users may incorrectly assume equivalence between products with similar corporate morphemes or fail to recognize differences in formulation, strength, or therapeutic indication.

Despite these concerns, morphemic blending in pharmaceutical brand names also provides important communicative advantages and aids comprehension in several ways. One important benefit is linguistic economy. Pharmaceutical terminology is often long, technical, and difficult to remember. Blended forms such as AL DS compress complex pharmacological information into short and manageable lexical units that are easier to pronounce, recall, prescribe, and market. Instead of

repeatedly using the full expression Artemether Lumefantrine Double Strength, healthcare professionals can communicate more efficiently through the compressed form AL DS.

Initial Syllabic+ Initial Syllabic + Initial Syllabic Blends of pharmaceutical brand names

The next category of blending types identified from the data is termed "Initial Syllabic+ Initial Syllabic + Initial Syllabic Blends." This classification involves the formation of a blend that combines the initial letters of three distinct elements, such as ingredients, dosage forms, local manufacturers, or foreign manufacturers. The result is a succinct yet informative blend that effectively captures key aspects of the product's identity.

Table 3: The contents of Initial Syllabic+ Initial Syllabic + Initial Syllabic Blends of pharmaceutical brand names

Blending Type	Ingredients	Dosage type	Local manufacturer	Foreign manufacturer
ATACAND	CANDESARTAN CILEXETIL	Tablet Oral	ASTRAZENECA AB(Sweden)	ASTRAZENECA SCIENTIFIC OFFICE
ARTEERON	ARTEMETHER	Injectable Solution	RONAK EXIM	GANYPHARMS MEDICAL SUPPLIES LIMITED
EMGIVIT	VITAMIN ABP-VITAMIN B1-VITAMIN B2 B.P -VITAMIN D3 B.P -NICOTINAMIDE B.P	TABLETS	M&G PHARMACEUTICALS LTD P.O BOX 1681 ACCRA	M&G PHARMACEUTICALS LTD P.O BOX 1681 ACCRA
GML -IBUP	PARACETAMOL-CAFFEINE BP-IBUPROFEN BP	CAPSULES	GEO MEDICORE LTD.	GEO MEDICORE LTD.
ECL-AL	DENATURED ALCOHOL	LIQUID	ERNEST CHEMIST LIMITED	ERNEST CHEMIST LIMITED

Source: *Drugs registered in the Database of the Food and Drugs Authority of Ghana between 2010 and 2020 (2020).*

The brand name **ATACAND** is interpreted as a **composite morphemic blend** formed from three functional domains:

1. ATACAND

Manufacturer: A- from AstraZeneca (Sweden)

Dosage form: TA- from Tablet

Ingredient: CAND- from Candesartan

The brand name ATACAND is derived from AstraZeneca + Tablet+ CANDESARTAN. ATACAND" is not a naturally existing word but an invented brand name built from parts of other words. More specifically, it is created by taking small meaningful pieces (not whole words) from three sources:

AstraZeneca → "A"

Tablet → "TA"

Candesartan → "CAND"

These pieces are then joined together in sequence to form a single new word: ATACAND. The name "ATACAND" is a deliberately constructed pharmaceutical brand name formed by blending shortened fragments of a company name, a dosage form, and the active drug ingredient to create a concise, memorable product identity.

2. ARTEERON

Ingredient: Artemether

Manufacturer: RONAK EXIM

Blending identification:

Root morpheme: **ART(E)-** from *Artemether*

Added segment: **-E-** from **EXIM,** the *manufacturer*

Root morpheme: **-RON-** from **RONAK,** the *manufacturer*

ARTEERON is a coined pharmaceutical brand name formed through partial clipping and multi-source blending, combining the ingredient base "Artemether" with morphemic elements from the manufacturer name "RONAK EXIM." These components are phonologically modified into the stylized form "ARTEERON" to create a distinctive and memorable pharmaceutical identity.

3. EMGIVIT

Ingredients: Multiple vitamins (A, B complex, D3, Nicotinamide)

Manufacturer: M&G Pharmaceuticals

Blending identification:

Core morpheme: **VIT → Vitamin**

Prefix segment: **EMGI-**, derived from manufacturer branding

EMGIVIT is a blended pharmaceutical brand name formed by combining a manufacturer-derived prefix ("EMGI," adapted from M&G Pharmaceuticals) with the semantic morpheme "VIT" from "vitamin." The name compresses multiple vitamin ingredients into a single recognizable and marketable symbolic identity centered on nutritional supplementation.

4. GML-IBUP

GML-IBUP is a pharmaceutical brand name formed by combining elements from two different domains: the manufacturer and the active ingredient.

Ingredients: Ibuprofen

Manufacturer: GEO MEDICORE LTD.

Blending identification:

GML → Geo Medicore Limited (manufacturer initials)

IBUP → truncated form of *Ibuprofen*

GML-IBUP is a compound pharmaceutical blend formed through the fusion of a manufacturer acronym ("GML" from Geo Medicore Limited) and a clipped pharmacological morpheme ("IBUP" from Ibuprofen). The name integrates corporate identity with ingredient recognition to produce a concise and functionally informative brand label.

5. ECL-AL

ECL-AL is a pharmaceutical or chemical product name formed by combining a manufacturer-based acronym with a shortened form of the product's chemical substance.

Ingredient: Denatured alcohol

Manufacturer: Ernest Chemist Limited

Blending identification:

ECL → Ernest Chemist Limited (initialism)

AL → Alcohol (truncated ingredient morpheme)

ECL-AL is a hybrid pharmaceutical-chemical brand name formed through the combination of the institutional acronym "ECL" (from Ernest Chemist Limited) and the truncated chemical morpheme "AL" (from Alcohol). The name reflects both manufacturer identity and product composition in a concise blended form.

The pattern of pharmaceutical naming shown in ATACAND, ARTEERON, EMGIVIT, GML IBUP, and ECL AL reflects a growing trend of multi-source morphemic blending, where fragments of manufacturer names, ingredient names, dosage forms, and chemical terms are compressed into short branded lexical units (Crystal, 2010; WHO, 2013). This strategy produces compact identifiers that carry several layers of meaning within a single form. While it improves branding efficiency and memorability, it also raises concerns about interpretability, patient safety, and communication accuracy in clinical practice (Lambert & Clews, 2011).

On the problematic side, this naming pattern can be misleading because it reduces complex pharmaceutical information into opaque abbreviations that are not self-explanatory to non-specialists. In ATACAND, for example, the combination of A from AstraZeneca, TA from tablet, and CAND from candesartan is not immediately transparent to patients or even some healthcare users. The resulting form appears as a single invented lexical item, which may conceal rather than clarify its pharmacological identity (WHO, 2013). This creates a situation where recognition is based on familiarity rather than understanding, increasing the risk of misinterpretation in low literacy or multilingual healthcare environments (FDA, 2016).

A similar issue arises in ARTEERON, where elements from Artemether and Ronak Exim are fused into a stylized form that is not easily decomposed without prior knowledge of its morphological structure. Such opacity can make it difficult to distinguish between similar sounding medicines, particularly in contexts where auditory or handwritten communication is involved (Lambert & Clews, 2011). This increases the potential for look-alike and sound alike medication errors, which are a known risk in pharmaceutical practice (ISMP, 2018).

In EMGIVIT, GML IBUP, and ECL AL, the problem becomes more pronounced due to the heavy reliance on abbreviations derived from manufacturer identities and ingredient fragments. While

these blends are efficient, they depend on insider knowledge to decode correctly. For instance, EMGI is only meaningful if the user knows it refers to M and G Pharmaceuticals, and IBUP is only interpretable if associated with ibuprofen. In clinical environments where speed, stress, and handwriting variability are present, such abbreviations may be misread or confused with similar morphemic patterns (WHO, 2013; FDA, 2016). This can contribute to dispensing or prescribing errors. Another safety concern is that dosage form and strength information may be obscured within these compressed structures. When critical descriptors such as tablet, injection, or concentration are not explicitly foregrounded, users may overlook important differences between formulations. This increases the risk of incorrect substitution or improper dosing, especially among patients who rely primarily on brand names rather than full prescription details (ISMP, 2018).

However, despite these risks, morphemic blending also provides significant advantages in pharmaceutical communication. One key benefit is cognitive efficiency. Long chemical names and institutional titles are difficult to repeatedly use in clinical communication, whereas blended forms such as ATACAND or GML IBUP provide shorter, more manageable lexical units that are easier to pronounce, recall, and document (Crystal, 2010). This improves speed and efficiency in prescribing and dispensing environments. Another advantage is that these blends support rapid professional recognition. Trained healthcare workers can often decode familiar morphemes such as CAND for candesartan or IBUP for ibuprofen, allowing faster identification of therapeutic classes and drug functions (Lambert & Clews, 2011). This semi structured predictability supports clinical workflow efficiency. In addition, morphemic blending enhances standardization in pharmaceutical branding by repeatedly using recognizable fragments across product lines. This creates internal consistency within therapeutic categories, which can assist professional memory and categorization (WHO, 2013). Even when compressed, these forms often retain partial semantic transparency that allows experienced users to reconstruct meaning.

Initial Syllabic + Initial Syllabic Blends of pharmaceutical brand names

The study also identified *Initial Syllabic + Initial Syllabic Blends* as an additional class of patterns that emerged from the data. This pattern involves combining the initial syllables of two distinct elements to create a new term or label. These elements often include critical components such as the names of ingredients, dosage forms, local manufacturers, or foreign manufacturers. For instance, the initial

syllables of a specific ingredient and its dosage form may be merged to form a concise and recognizable blend. Similarly, the syllabic combination of a local manufacturer's name with that of a foreign counterpart could result in a hybridized label that reflects both origins. This blending strategy not only enhances brevity and memorability but also underscores the interconnectedness of the elements represented in the terms.

Table 4: The contents of Initial syllabic + initial syllabic) medicine brand names

Blending Type	Ingredients	Dosage type	Local manufacturer	Foreign manufacturer
CIPROBAY	CIPROFLOXACIN	Tablet film coated	BAYER - SCHERING Ghana office.	BAYER-SCHERING HEALTHCARE AG
IBUGLO	IBUPROFEN, PARACETAMOL, CAFFEINE ANHYDROUS	Capsule oral (Hard gelatin)	NEW GLOBAL PHARMACEUTICAL LIMITED	NEW GLOBAL PHARMACEUTICAL LIMITED
WIDALUM	ARTEMETHER, LUMEFANTRINE	Oral Suspension	CLARION INDIA	WIDAMA PHARMACY CO. LTD
AXAPARA	PARACETAMOL	Injectable Solution Large Volume	AXA PARENTERALS LIMITED	HAMS GLOBE LTD
KINAMET	METFORMIN HYDROCHLORIDE BP	TABLETS	KINAPHARMA LIMITED B920-10 MAUSOLEUM LANE NORTH INDUSTRIAL ACCRA	KINAPHARMA LIMITED P.O BOX TF 241 TRADE FAIR SITE ACCRA

Source: *Database of the Food and Drugs Authority of Ghana (2020)*

The study, within this classification, revealed that Initial Syllabic + Initial Syllabic Blends are predominantly formed from combinations of key syllables representing the ingredients and the names of manufacturing companies. This naming strategy highlights a deliberate and systematic approach to brand identity in the pharmaceutical industry.

1. CIPROBAY

CIPROBAY is a pharmaceutical product name formed by combining a truncated ingredient morpheme with a shortened manufacturer identity.

Ingredient: Ciprofloxacin

Manufacturer: Bayer-Shering Healthcare AG

Blending identification:

CIPRO → Ciprofloxacin (truncated ingredient morpheme)

BAY → Bayer (manufacturer clipping)

CIPROBAY is a hybrid pharmaceutical brand name formed through the combination of the truncated pharmacological morpheme "CIPRO" (from Ciprofloxacin) and the clipped manufacturer morpheme "BAY" (from Bayer). The name reflects both therapeutic identity and corporate origin in a concise blended form.

2. IBUGLO

IBUGLO is a pharmaceutical product name formed by combining a clipped ingredient morpheme with a shortened manufacturer-derived segment.

Ingredients: Ibuprofen, Paracetamol, Caffeine Anhydrous

Manufacturer: New Global Pharmaceutical Limited

Blending identification:

IBU → Ibuprofen (truncated ingredient morpheme)

GLO → Global (manufacturer clipping)

IBUGLO is a hybrid pharmaceutical brand name formed through the combination of the truncated

ingredient morpheme "IBU" (from Ibuprofen) and the clipped manufacturer-derived morpheme "GLO" (from Global). The name reflects both therapeutic reference and company identity in a concise blended form.

3. WIDALUM

WIDALUM is a pharmaceutical product name formed by combining a manufacturer-derived morpheme with a truncated pharmacological ingredient segment.

Ingredients: Artemether, Lumefantrine

Manufacturer: Widama Pharmacy Co. Ltd

Blending identification:

WIDA → Widama (manufacturer clipping)

LUM → Lumefantrine (truncated ingredient morpheme)

WIDALUM is a hybrid pharmaceutical brand name formed through the combination of the manufacturer-derived morpheme "WIDA" (from Widama) and the truncated ingredient morpheme "LUM" (from Lumefantrine). The name reflects both corporate identity and therapeutic composition in a concise blended form.

4. AXAPARA

AXAPARA is a pharmaceutical product name formed by combining a manufacturer identifier with a truncated ingredient morpheme.

Ingredient: Paracetamol

Manufacturer: Axa Parenterals Limited

Blending identification:

AXA → AXA (manufacturer identifier)

PARA → Paracetamol (truncated ingredient morpheme)

AXAPARA is a hybrid pharmaceutical brand name formed through the combination of the manufacturer identifier "AXA" and the truncated ingredient morpheme "PARA" (from

Paracetamol). The name reflects both company identity and therapeutic composition in a concise blended form.

5. KINAMET

KINAMET is a pharmaceutical product name formed by combining a manufacturer-derived morpheme with a truncated pharmacological ingredient segment.

Ingredient: Metformin Hydrochloride BP

Manufacturer: Kinapharma Limited

Blending identification:

KINA →Kinapharma (manufacturer clipping)

MET → Metformin (truncated ingredient morpheme)

The brand name is a two-part morphemic blend: Manufacturer identity (KINA) Pharmacological ingredient identity (MET). KINAMET is a hybrid pharmaceutical brand name formed through the combination of the manufacturer-derived morpheme "KINA" (from Kinapharma) and the truncated ingredient morpheme "MET" (from Metformin). The name reflects both corporate identity and therapeutic composition in a concise blended form.

The pattern of initial syllabic plus initial syllabic blending seen in CIPROBAY, IBUGLO, WIDALUM, AXAPARA, and KINAMET represents a more structured and comparatively balanced approach to pharmaceutical naming when compared to earlier patterns such as highly compressed multi source codes or heavily abbreviated dosage blends. In this system, syllables from the ingredient and manufacturer are still compressed, but the resulting forms retain stronger phonological and semantic cues, which improves interpretability while maintaining branding efficiency (Crystal, 2010; WHO, 2013).

In CIPROBAY, for example, the structure CIPRO from ciprofloxacin and BAY from Bayer creates a stable association between the drug and its manufacturer. Unlike more opaque codes such as GML or ECL AL, the CIPRO element remains widely recognizable in pharmaceutical discourse and allows healthcare professionals to quickly identify the antibiotic class (Lambert & Clews, 2011). This makes the name more transparent and reduces ambiguity in clinical communication, particularly in fast paced prescribing environments. Similarly, in IBUGLO, WIDALUM, AXAPARA, and

KINAMET, the syllabic structure preserves partial visibility of the active ingredient. Elements such as IBU for ibuprofen, PARA for paracetamol, and MET for metformin are well established morphemic markers in pharmacological terminology (WHO, 2013). This familiarity significantly enhances comprehension among healthcare professionals, even when the manufacturer segment contributes less direct therapeutic information. Compared to earlier patterns where manufacturer acronyms dominate the structure, these blends maintain a stronger focus on pharmacological identity.

A key advantage of this pattern is that it supports faster cognitive decoding without requiring full prior memorization of the brand name. Because syllables often align with known drug stems, users can infer therapeutic class or ingredient composition even on first encounter. This is particularly important in clinical environments where rapid recognition improves efficiency and reduces cognitive load during prescribing and dispensing (Crystal, 2010). Another strength is that these names achieve a better balance between branding and pharmacological transparency. Earlier blending patterns, especially those dominated by manufacturer initials or multi domain abstraction, often obscure medical meaning. In contrast, syllabic blends retain meaningful fragments of the active ingredient, allowing the name to function both as a commercial label and a partial informational cue (Lambert & Clews, 2011). This improves usability in professional communication.

This pattern also reduces the likelihood of complete semantic opacity. Even when the full meaning is not immediately known, users can often infer part of the therapeutic content. For example, recognizing MET in KINAMET or PARA in AXAPARA provides useful clinical cues that are absent in more abstract naming systems. This partial transparency contributes to safer interpretation and better decision making compared to fully acronymic or highly compressed forms (FDA, 2016).

When compared to earlier patterns such as GML IBUP or ECL AL, which rely heavily on acronymic compression and dual domain abstraction, the syllabic blending system is generally more user friendly. It minimizes confusion by preserving recognizable pharmaceutical stems while still maintaining the advantages of short, memorable branding. This reduces the risk of medication errors associated with overly opaque naming structures (ISMP, 2018). This naming strategy represents a more effective compromise between clarity and compression. It retains the efficiency and marketability of blended pharmaceutical names while improving interpretability through

recognizable syllabic fragments. As a result, it tends to enhance comprehension and professional usability more consistently than earlier, more opaque blending patterns (WHO, 2013; Crystal, 2010).

Initial Syllabic + Medial Syllabic medicine brand names

Additionally, the study identified a distinct pattern, referred to as **Initial Syllabic + Medial Syllabic** medicine brand names. This pattern involves the fusion of the initial syllable from one element and the medial syllable from another, drawn from a selection of key components such as the active ingredients, dosage forms, local manufacturers, or foreign manufacturers. By combining these syllabic segments, the resulting brand names effectively reflect a blend of both local and international influences, offering a unique way to appeal to diverse consumer bases while maintaining a connection to the product's composition and origin.

Table 5: The contents of Initial syllabic + Medial syllabic medicine brand names

Blending Type	Ingredients	Dosage type	Local manufacturer	Foreign manufacturer
WOCKLAV 625 TABLET	**AMOXICILLIN-CLAVULANIC ACID**	**TABLET**	**WOCKHARDT LTD**	**WOCKHARDT LTD**
PHYTOMOX	**AMOXICILLIN**	**Powder for Oral Suspension**	**PHYTO-RIKER (GIHOC) PHARMACEUTICALS LTD**	**PHYTO-RIKER (GIHOC) PHARMACEUTICALS LTD**
LETAVIT	**MULTIVITAMIN**	**Tablet film coated**	**LETAP PHARMACEUTICALS LTD**	**LETAP PHARMACEUTICALS LTD**
UTIRIZINE	**CETIRIZINE**	**Tablet Oral**	**UMEDICA LABORATORIES PVT. LTD.**	**UMEDICA LABORATORIES PVT. LTD.**

LETAZITH	**AZITHROMYCIN**	**Capsule oral (Hard gelatin)**	**LETAP PHARMACEUTICALS LTD**	**LETAP PHARMACEUTICALS LTD**

Source: *Drugs registered in the Database of the Food and Drugs Authority of Ghana between 2010 and 2020 (2020)*

This category of blending reveals a systematic approach to the construction of brand names, where initial and medial syllables are drawn from key components such as manufacturing companies, active ingredients, and, in limited instances, dosage forms. The analysis of these blends highlights their functional role in encoding relevant information about the product while maintaining brevity and market appeal.

1. **WOCKLAV 625 TABLET**

WOCKLAV 625 TABLET is a pharmaceutical brand name created through morphemic blending, combining elements that reflect both the manufacturer's identity and the therapeutic ingredient composition. The name incorporates a clipped form associated with the producing company alongside a truncated pharmacological morpheme derived from one of its active ingredients. This blending strategy creates a concise and recognizable brand identity that simultaneously signals corporate origin and medicinal function.

Ingredient: Amoxicillin–Clavulanic Acid

Manufacturer: Wockhardt Ltd

Blending identification:

WOCK → Wockhardt (manufacturer clipping)

CLAV → Clavulanic Acid (truncated ingredient morpheme)

WOCKLAV is a hybrid pharmaceutical brand name formed through the combination of the clipped manufacturer morpheme "WOCK" (from Wockhardt) and the truncated pharmacological morpheme "CLAV" (from Clavulanic Acid). The name reflects both corporate origin and therapeutic composition in a concise blended form.

2. **PHYTOMOX**

PHYTOMOX is a pharmaceutical brand name formed through lexical blending, integrating a shortened manufacturer identifier with a truncated pharmacological morpheme from the active ingredient. The naming structure serves a dual communicative function by presenting both institutional identity and therapeutic reference within a compact and marketable form. This type of blending is common in pharmaceutical branding because it enhances memorability while maintaining medicinal association.

Ingredient: Amoxicillin

Manufacturer: Phyto-Riker (GIHOC) Pharmaceuticals Ltd

Blending identification:

PHYTO → Phyto-Riker (manufacturer clipping)

MOX → Amoxicillin (truncated ingredient morpheme)

PHYTOMOX is a hybrid pharmaceutical brand name formed through the combination of the clipped manufacturer morpheme "PHYTO" (from Phyto-Riker) and the truncated pharmacological morpheme "MOX" (from Amoxicillin). The name integrates both corporate identity and therapeutic reference into a compact blended structure.

3. **LETAVIT**

LETAVIT is a pharmaceutical product name developed through the blending of a clipped manufacturer morpheme and a shortened therapeutic descriptor. The brand name combines institutional identity with an indication of the product's nutritional or therapeutic function, resulting in a concise and easily identifiable pharmaceutical label. Such naming patterns are frequently employed in pharmaceutical branding to reinforce both product purpose and producer recognition.

Ingredient: Multivitamin

Manufacturer: Letap Pharmaceuticals Ltd

Blending identification:

LETA → Letap (manufacturer clipping)

VIT → Vitamin / Multivitamin (truncated ingredient morpheme)

LETAVIT is a hybrid pharmaceutical brand name formed through the combination of the clipped manufacturer morpheme "LETA" (from Letap) and the truncated therapeutic morpheme "VIT" (from Vitamin/Multivitamin). The name simultaneously signals corporate origin and nutritional therapeutic function in a concise blended form.

4. **UTIRIZINE**

UTIRIZINE is a pharmaceutical brand name constructed through morphemic blending, combining a shortened reference to the manufacturer with a truncated form of the active pharmacological ingredient. The resulting name preserves recognizable elements of the generic drug while also embedding corporate identity, thereby creating a distinctive and commercially identifiable pharmaceutical term.

Ingredient: Cetirizine

Manufacturer: Umedica Laboratories Pvt. Ltd.

Blending identification:

U → Umedica (manufacturer initial clipping)

TIRIZINE → Cetirizine (truncated ingredient morpheme)

UTIRIZINE is a hybrid pharmaceutical brand name formed through the combination of the manufacturer initial morpheme "U" (from Umedica) and the truncated pharmacological morpheme "TIRIZINE" (from Cetirizine). The name reflects both therapeutic identity and corporate association in a condensed blended form.

5. **LETAZITH**

LETAZITH is a pharmaceutical brand name formed through a hybrid lexical blending process that combines a clipped manufacturer identifier with a truncated pharmacological morpheme derived

from the active ingredient. The structure of the name simultaneously communicates corporate affiliation and therapeutic identity, producing a concise and distinctive pharmaceutical brand expression.

Ingredient: Azithromycin

Manufacturer: Letap Pharmaceuticals Ltd

Blending identification:

LETA → Letap (manufacturer clipping)

ZITH → Azithromycin (truncated ingredient morpheme)

LETAZITH is a hybrid pharmaceutical brand name formed through the combination of the clipped manufacturer morpheme "LETA" (from Letap) and the truncated pharmacological morpheme "ZITH" (from Azithromycin). The name combines therapeutic reference and manufacturer identity within a concise morphemic blend.

The pattern of initial and medial syllabic blending observed in WOCKLAV, PHYTOMOX, LETAVIT, UTIRIZINE, and LETAZITH reflects a more refined pharmaceutical naming strategy in which syllables from manufacturer names and active ingredients are combined into compact, structured forms. Compared with earlier highly compressed acronym systems, this pattern provides a clearer balance between informational content and branding, making it generally more interpretable and clinically usable (Crystal, 2010; WHO, 2013).

On the limited side, some challenges still exist, particularly that these names are not fully transparent to non-specialist users. In WOCKLAV, for example, the combination of WOCK and CLAV is not immediately self-explanatory to patients without prior knowledge of Wockhardt or clavulanic acid. However, even here, the internal structure remains partially visible, meaning the name is not entirely opaque. This makes the risk of misunderstanding lower than in earlier systems dominated by dense acronyms or multi domain codes (Lambert & Clews, 2011). Similarly, in PHYTOMOX, LETAZITH, and UTIRIZINE, interpretation requires some familiarity with pharmaceutical stems. However, compared to earlier patterns such as GML IBUP or ECL AL, these syllabic blends retain more widely recognized ingredient markers such as MOX for amoxicillin, ZITH for azithromycin, CLAV for clavulanic acid, and TIRIZINE for cetirizine. These established morphemes improve interpretability and reduce the likelihood of complete confusion, especially

among trained healthcare professionals (WHO, 2013). Importantly, compared to earlier patterns, the safety risks linked to misinterpretation are reduced. The presence of recognizable ingredient fragments provides semantic cues that help distinguish drug classes and therapeutic identities. This lowers the likelihood of medication errors associated with entirely opaque abbreviations, a concern frequently highlighted in drug safety literature (FDA, 2016; ISMP, 2018).

The advantages of this pattern are therefore more pronounced. One key benefit is improved clinical readability and recall. Names such as WOCKLAV and PHYTOMOX are shorter, pronounceable, and easier to retain in memory, which improves efficiency in prescribing and communication processes (Crystal, 2010). Compared with earlier highly compressed naming systems, these forms are less cryptic and more intuitively interpretable for trained users. Another major advantage is stronger semantic visibility of active ingredients. Widely used pharmaceutical stems such as CLAV, MOX, ZITH, and VIT allow healthcare professionals to quickly infer therapeutic class or drug identity even when full names are not provided. This supports faster clinical reasoning and reduces cognitive load during decision making in healthcare environments (Lambert & Clews, 2011). This pattern also offers a better balance between branding and pharmacological meaning. Unlike earlier acronym heavy systems where manufacturer identity often dominated, syllabic blending preserves both corporate and therapeutic information within the same structure. This dual encoding improves traceability while maintaining clinical relevance (WHO, 2013).

In addition, the repeated use of familiar syllabic fragments enhances standardization and professional familiarity. Healthcare workers become accustomed to decoding recurring morphemes, which improves learning efficiency and reduces uncertainty over time compared to less structured abbreviation-based systems (FDA, 2016). The initial and medial syllabic blending pattern represents a clear improvement over earlier pharmaceutical naming trends. While some interpretive effort is still required, the presence of recognizable morphemic elements significantly reduces confusion and enhances safety. At the same time, it maintains strong advantages in memorability, communication efficiency, and branding clarity, making it a more balanced and clinically supportive naming strategy (ISMP, 2018; Crystal, 2010).

Initial Syllabic + Final Syllabic Blends medicine brand names

The study further revealed the emergence of **Initial Syllabic + Final Syllabic Blends** as an

additional class of patterns identified in the data. This blending pattern is characterized by the combination of an initial syllable derived from one element, such as the name of an ingredient, with the final syllable taken from another element, often the name of the manufacturing company. This innovative approach to word formation not only reflects a creative linguistic process but also highlights a strategic branding technique.

Table 6: The contents of Initial syllabic + final syllabic medicine brand names

Blending Type	Ingredients	Dosage type	Local manufacturer	Foreign manufacturer
AUROXONE	**CEFTRIAXONE**	**INJECTABLE POWDER**	**AUROBINDO PHARMA LIMITED**	**SUPRA PHARMA LIMITED**
LISINOVA	**HYDROCHLOROTHIAZIDE, LISINOPRIL**	**Tablet Oral**	**PHARMANOVA LTD.**	**PHARMANOVA LTD.**
BASEFENAC	**CHLORZOXAZONE, DICLOFENAC, PARACETAMOL**	**Tablet Oral**	**BASE PHARMACY Co. LTD**	**BASE PHARMACY (INDIA)**
GEBEDOL	**CAFFEINE, IBUPROFEN, PARACETAMOL**	**Tablet Oral**	**GB PHARMA (GH) LTD**	**MISSION VIVACARE LIMITED**
NAPHCON - A 2	**NAPHAZOLINE, PHENIRAMINE**	**Eye drops**	**PARACELSUS PHARMACY &MARKETING COMPANY LIMITED**	**ALCON-COUVREUR**
NIRFOL 1%	**PROPOFOL**	**Injectable Suspension**	**NIRMA HEALTHCARE LIMITED**	**M & Y GROUP (GH.) LTD**

Source: Drugs registered in the Database of the Food and Drugs Authority of Ghana between 2010 and 2020 (2020)

This type of blending highlights the formation of brand names by merging the initial and final parts of key elements, such as manufacturing companies and active ingredients. Some blends place the ingredient before the company name, while others reverse this order. Analyzing these blends reveals their functional purpose in communicating essential product information while maintaining

brevity and market appeal.

1. **AUROXONE**

AUROXONE is a pharmaceutical brand name formed through morphemic blending, combining a clipped manufacturer identifier with a truncated pharmacological morpheme derived from the active ingredient. The name structure reflects both institutional identity and therapeutic composition, creating a concise and recognizable pharmaceutical label. This blending strategy enhances brand memorability while preserving medicinal association.

Ingredient: Ceftriaxone

Manufacturer: Aurobindo Pharma Limited

Blending identification:

AURO → Aurobindo (manufacturer clipping)

XONE → Ceftriaxone (truncated ingredient morpheme)

AUROXONE is a hybrid pharmaceutical brand name formed through the combination of the clipped manufacturer morpheme "AURO" (from Aurobindo) and the truncated pharmacological morpheme "XONE" (from Ceftriaxone). The name reflects both therapeutic identity and corporate origin in a concise blended form.

2. **LISINOVA**

LISINOVA is a pharmaceutical product name created through lexical blending, combining a truncated pharmacological morpheme with a clipped manufacturer identifier. The resulting name integrates therapeutic identity with institutional branding, producing a distinctive and marketable pharmaceutical expression. Such blended naming structures are commonly used to establish product recognition while maintaining a connection to the active ingredient.

Ingredient: Hydrochlorothiazide, Lisinopril

Manufacturer: Pharmanova Ltd.

Blending identification:

LISI → Lisinopril (truncated ingredient morpheme)

NOVA → Pharmanova (manufacturer clipping)

LISINOVA is a hybrid pharmaceutical brand name formed through the combination of the truncated pharmacological morpheme "LISI" (from Lisinopril) and the clipped manufacturer morpheme "NOVA" (from Pharmanova). The name simultaneously conveys therapeutic composition and corporate affiliation in a concise blended structure.

3. **BASEFENAC**

BASEFENAC is a pharmaceutical brand name developed through morphemic blending, incorporating a clipped manufacturer identifier together with a truncated pharmacological morpheme derived from one of the active ingredients. The blended structure creates a concise and recognizable brand identity that reflects both corporate origin and therapeutic reference.

Ingredient: Chlorzoxazone, Diclofenac, Paracetamol

Manufacturer: Base Pharmacy Co. Ltd

Blending identification:

BASE → Base Pharmacy (manufacturer clipping)

FENAC → Diclofenac (truncated ingredient morpheme)

BASEFENAC is a hybrid pharmaceutical brand name formed through the combination of the clipped manufacturer morpheme "BASE" (from Base Pharmacy) and the truncated pharmacological morpheme "FENAC" (from Diclofenac). The name reflects both corporate identity and therapeutic composition within a compact blended form.

4. **GEBEDOL**

GEBEDOL is a pharmaceutical brand name constructed through lexical blending, combining a clipped manufacturer identifier with a truncated therapeutic morpheme associated with pain relief medication. The resulting name provides a compact representation of both institutional identity and pharmacological function, thereby enhancing brand distinctiveness and product recognition.

Ingredient: Caffeine, Ibuprofen, Paracetamol

Manufacturer: GB Pharma (GH) Ltd

Blending identification:

GEBE → GB Pharma (manufacturer clipping/phonological adaptation)

DOL → Analgesic/pain-relief morpheme commonly associated with Paracetamol formulations

GEBEDOL is a hybrid pharmaceutical brand name formed through the combination of the adapted manufacturer morpheme "GEE BEE" (from GB Pharma) and the therapeutic morpheme "DOL," commonly associated with analgesic formulations. The name conveys both corporate affiliation and pain-relief function in a concise blended structure.

5. **NAPHCON-A 2**

NAPHCON-A 2 is a pharmaceutical brand name formed through morphemic blending, combining truncated pharmacological morphemes derived from the active ingredients. Unlike manufacturer-oriented blends, the name primarily emphasizes therapeutic composition by directly incorporating recognizable portions of the medicinal substances. This structure reinforces immediate pharmacological association and therapeutic recognition.

Ingredient: Naphazoline, Pheniramine

Manufacturer: Alcon-Couvreur

Blending identification:

NAPH → Naphazoline (truncated ingredient morpheme)

CON → Conjunctive/ophthalmic therapeutic marker

A → Product series or formulation marker

NAPHCON-A 2 is a pharmaceutical brand name formed primarily through pharmacological blending, combining the truncated ingredient morpheme "NAPH" (from Naphazoline) with the therapeutic marker "CON," associated with ophthalmic/conjunctival treatment terminology. The appended "A" functions as a formulation or product-series identifier, collectively producing a concise therapeutic brand expression.

6. **NIRFOL 1%**

NIRFOL 1% is a pharmaceutical product name created through the blending of a clipped manufacturer identifier with a truncated pharmacological morpheme derived from the active ingredient. The resulting name combines institutional identity and therapeutic reference in a concise and commercially distinctive form. Such naming structures are commonly used in pharmaceutical branding to reinforce both product recognition and manufacturer association.

Ingredient: Propofol

Manufacturer: Nirma Healthcare Limited

Blending identification:

NIR → Nirma (manufacturer clipping)

FOL → Propofol (truncated ingredient morpheme)

NIRFOL is a hybrid pharmaceutical brand name formed through the combination of the clipped manufacturer morpheme "NIR" (from Nirma) and the truncated pharmacological morpheme "FOL" (from Propofol). The name reflects both therapeutic identity and corporate origin in a concise blended form.

The pattern of morphemic blending in pharmaceutical naming seen in AUROXONE, LISINOVA, BASEFENAC, GEBEDOL, NAPHCON A 2, and NIRFOL 1% shows how drug names are formed by combining fragments of manufacturer names with parts of active ingredients. This produces short, structured, and recognisable terms that support both branding and clinical communication while still preserving meaningful links to therapeutic content (WHO, 2013; Crystal, 2010).

One of the main strengths of this approach is improved clarity for trained healthcare users. Familiar morphemes such as FENAC, DOL, FOL, or CON act as quick reference cues for therapeutic class or drug function. For example, BASEFENAC can immediately suggest a non-steroidal anti-inflammatory profile linked to diclofenac derivatives, while GEBEDOL signals an analgesic preparation. This internal structure reduces the time needed for interpretation in clinical settings and supports faster decision making, especially in busy healthcare environments (Lambert & Clews, 2011). In addition, manufacturer elements such as AURO, NOVA, or NIR provide useful information about product origin, which improves traceability, procurement processes, and consistency in prescribing practices (WHO, 2013).

Another important advantage is the balance between memorability and meaning. Compared to long chemical names or abstract codes, these blended forms are easier to pronounce, recall, and communicate verbally. This improves efficiency in prescriptions, reduces communication strain between healthcare professionals, and supports smoother documentation (Crystal, 2010). The repetition of familiar morphemic fragments across products also strengthens professional familiarity over time, making it easier for clinicians to recognise patterns and understand drug categories quickly. As a result, the system supports both cognitive efficiency and practical usability in real world healthcare environments (FDA, 2016).

The structure also enhances semantic transparency in a controlled way. While not fully descriptive of every active ingredient, the names still provide enough internal cues to guide understanding of the primary therapeutic function. In combination medicines such as BASEFENAC or GEBEDOL, the most clinically relevant component is often highlighted through the morphemic stem, allowing rapid identification of the main therapeutic action. This selective emphasis supports quicker recognition in contexts where time efficiency is critical.

Although some complexity exists in multi-ingredient formulations where not all components are reflected in the name, this limitation is generally manageable within professional practice through prescribing systems and supplementary drug information resources. In most cases, the benefits of faster recognition, improved recall, and clearer therapeutic association outweigh the risk of partial interpretation, particularly when supported by clinical training and regulatory labelling standards (ISMP, 2018).

The morphemic blending in pharmaceutical naming represents an efficient and functional system that strengthens communication in healthcare. It improves readability, supports faster clinical interpretation, enhances memorability, and maintains useful links to both manufacturer identity and therapeutic purpose. While it does not replace full pharmacological descriptions, it functions effectively as a practical naming strategy that supports everyday medical use and decision making (WHO, 2013; Crystal, 2010).

Final part + final part medicine brand names

Ultimately, the study uncovers an additional fascinating pattern in the construction of brand names. This pattern emerges from the creative blending of the final segments of ingredient names with the

concluding portions of company names. By merging these elements, brands achieve a distinctive identity that not only reflects the essence of their products but also reinforces their corporate identity. This technique showcases a strategic approach to naming, where the interplay of linguistic elements enhances memorability and strengthens the association between the brand and its key components.

Table 7: The contents of final part + final part medicine brand names

Blending Type	Ingredients	Dosage type	Local manufacturer	Foreign manufacturer
NOVAGYL	METRONIDAZOLE (FLAGYL DIFERRENT BRAND NAME)	Oral Suspension	PHARMANOVA LTD.	PHARMANOVA LTD.
XONENAK	CEFTRIAXONE	POWDER FOR INJECTION	RONAK EXIM PRIVATE LIMITED IND	RONAK EXIM PRIVATE LIMITED
DAMSGYL	METRONIDAZOLE (FLAGYL DIFERRENT BRAND NAME)	Tablet Oral	DANADAMS PHARMACEUTICAL INDUSTRY LIMITED	DANPONG PHARMACY
AMSFEN	IBUPROFEN	Tablet Oral	DANADAMS PHARMACEUTICAL INDUSTRY LIMITED	DANADAMS PHARMACEUTICAL INDUSTRY LIMITED
KAYGYL	METRONIDAZOLE BP (FLAGYL DIFERRENT BRAND NAME)	TABLETS	ESKAY THERAPEUTICS LTD.	ESKAY THERAPEUTICS LTD.

Source: *Drugs registered in the Database of the Food and Drugs Authority of Ghana between 2010 and 2020 (2020)*

This class of brand names is crafted using two distinct methods. The first method places the final part of the ingredient name before the final segment of the company name, emphasizing the ingredient to highlight its importance or appeal to consumer recognition of the product's composition. The second method, on the other hand, positions the final part of the company name before the ingredient name, prioritizing the brand identity of the manufacturing company and leveraging its established reputation to enhance product trust and marketability.

1. **NOVAGYL**

NOVAGYL is a pharmaceutical brand name formed through morphemic blending, combining a clipped manufacturer identifier with a borrowed therapeutic morpheme derived from an established reference brand associated with the active ingredient Metronidazole. The structure of the name reflects both institutional identity and therapeutic association, creating a concise and recognizable pharmaceutical expression.

Ingredient: Metronidazole

Manufacturer: Pharmanova Ltd.

Blending identification:

NOVA → Pharmanova (manufacturer clipping)

GYL → Flagyl (borrowed/truncated therapeutic morpheme)

NOVAGYL is a hybrid pharmaceutical brand name formed through the combination of the clipped manufacturer morpheme “NOVA” (from Pharmanova) and the truncated therapeutic morpheme “GYL” (adapted from the established Metronidazole brand name Flagyl). The name reflects both corporate affiliation and therapeutic association in a concise blended form.

2. **XONENAK**

XONENAK is a pharmaceutical brand name constructed through lexical blending, combining a truncated pharmacological morpheme with a clipped manufacturer identifier. The resulting structure creates a concise pharmaceutical label that simultaneously reflects therapeutic composition and institutional association.

Ingredient: Ceftriaxone

Manufacturer: Ronak Exim Private Limited

Blending identification:

XONE → Ceftriaxone (truncated ingredient morpheme)

NAK → Ronak (manufacturer clipping)

XONENAK is a hybrid pharmaceutical brand name formed through the combination of the truncated pharmacological morpheme "XONE" (from Ceftriaxone) and the clipped manufacturer morpheme "NAK" (from Ronak). The name combines therapeutic identity and corporate origin in a compact blended structure.

3. **DAMSGYL**

DAMSGYL is a pharmaceutical brand name formed through morphemic blending, integrating a clipped manufacturer identifier with a therapeutic morpheme adapted from an established Metronidazole reference brand. The resulting name reflects both institutional identity and therapeutic association while maintaining brevity and recognizability in pharmaceutical branding.

Ingredient: Metronidazole

Manufacturer: Danadams Pharmaceutical Industry Limited

Blending identification:

DAMS → Danadams (manufacturer clipping)

GYL → Flagyl (borrowed/truncated therapeutic morpheme)

DAMSGYL is a hybrid pharmaceutical brand name formed through the combination of the clipped manufacturer morpheme "DAMS" (from Danadams) and the therapeutic morpheme "GYL" (adapted from the reference brand Flagyl). The name conveys both corporate affiliation and therapeutic identity in a concise blended form.

4. **AMSFEN**

AMSFEN is a pharmaceutical brand name developed through lexical blending, combining a clipped manufacturer identifier with a truncated pharmacological morpheme associated with the active ingredient Ibuprofen. The name structure simultaneously reflects corporate identity and

therapeutic composition, resulting in a concise and commercially distinctive pharmaceutical expression.

Ingredient: Ibuprofen

Manufacturer: Danadams Pharmaceutical Industry Limited

Blending identification:

AMS → Danadams (manufacturer clipping)

FEN → Ibuprofen / anti-inflammatory therapeutic morpheme

AMSFEN is a hybrid pharmaceutical brand name formed through the combination of the clipped manufacturer morpheme "AMS" (from Danadams) and the therapeutic morpheme "FEN," commonly associated with anti-inflammatory and analgesic formulations. The name reflects both corporate origin and medicinal identity in a concise blended structure.

5. **KAYGYL**

KAYGYL is a pharmaceutical brand name created through morphemic blending, combining a clipped manufacturer identifier with a therapeutic morpheme adapted from an established Metronidazole reference brand. The structure of the name emphasizes both institutional association and therapeutic recognition, producing a concise and memorable pharmaceutical label.

Ingredient: Metronidazole BP

Manufacturer: Eskay Therapeutics Ltd.

Blending identification:

KAY → Eskay (manufacturer clipping)

GYL → Flagyl (borrowed/truncated therapeutic morpheme)

KAYGYL is a hybrid pharmaceutical brand name formed through the combination of the clipped manufacturer morpheme "KAY" (from Eskay) and the therapeutic morpheme "GYL" (adapted from the established Metronidazole brand Flagyl). The name reflects both therapeutic association and corporate origin in a concise blended form.

The pattern of pharmaceutical brand naming seen in NOVAGYL, XONENAK, DAMSGYL, AMSFEN, and KAYGYL reflects a structured form of morphemic blending in which elements of manufacturer names are combined with fragments of active ingredients or established therapeutic brand references. This naming strategy is designed to create compact, memorable, and

commercially distinctive drug names while still embedding partial information about composition and origin. In practice, the trend operates in two main ways: either prioritising the ingredient element to signal therapeutic function, or foregrounding the manufacturer element to strengthen brand identity and trust.

On one hand, this pattern can significantly aid comprehension, particularly for healthcare professionals who are familiar with pharmaceutical naming conventions. The inclusion of recognizable morphemes such as GYL, XONE, or FEN allows quick association with therapeutic classes. For example, AMSFEN may be readily linked to anti inflammatory agents through the FEN element, while XONENAK can suggest a ceftriaxone based antibiotic due to the XONE fragment. Similarly, NOVAGYL, DAMSGYL, and KAYGYL all contain the GYL element, which is commonly associated with metronidazole related products, enabling faster identification of antimicrobial function. This type of internal structure reduces cognitive effort in clinical environments, supports quicker prescribing decisions, and improves communication efficiency among healthcare workers (Crystal, 2010; WHO nomenclature principles, 2013).

Another advantage is that the blending of manufacturer and ingredient elements supports dual recognition. Manufacturer fragments such as NOVA, DAMS, AMS, or KAY help maintain traceability and reinforce institutional familiarity, while ingredient based segments provide therapeutic cues. This dual coding system allows professionals to extract partial meaning even without full exposure to the chemical name, improving speed of interpretation and supporting memory retention in fast paced healthcare settings (Lambert & Clews, 2011). In addition, the repeated use of consistent morphemic patterns across different drugs strengthens familiarity over time, making it easier for practitioners to recognise relationships between products and therapeutic categories.

However, despite these advantages, the same naming structure can also be misleading and create safety concerns. One key issue is that the names often provide only partial representation of the actual drug composition. For instance, AMSFEN highlights an anti-inflammatory association through FEN, but this does not fully describe formulation complexity or additional pharmacological considerations. Similarly, XONENAK and NOVAGYL may suggest a simpler or more direct relationship to a single active ingredient than actually exists in practice. This selective visibility can

lead to incomplete understanding, particularly when users rely on name fragments rather than full prescribing information.

A further concern is the use of borrowed or adapted therapeutic morphemes, such as GYL derived from Flagyl. While this improves recognisability, it can also create confusion by encouraging assumptions of equivalence between different products that may not be identical in formulation, dosage, or regulatory status. This increases the risk of overgeneralisation, where similar sounding names are incorrectly assumed to be interchangeable.

There is also the problem of look-alike and sound alike risk. When multiple products share similar endings such as GYL, XONE, or FEN, there is a greater likelihood of confusion in prescribing, dispensing, or verbal communication. In busy clinical environments, this can contribute to medication errors, particularly when names are recalled from memory or communicated orally rather than checked directly against prescriptions. The combination of familiar fragments can therefore produce an illusion of clarity while still allowing critical distinctions between drugs to be overlooked.

For patients, the risks are even more pronounced. These blended names are not inherently transparent without professional knowledge, meaning that fragments like GYL or FEN do not clearly communicate purpose or composition. As a result, patients may rely on partial explanations or assumptions, which can affect safe medication use and adherence. Even among healthcare providers, reliance on recognizable morphemes can sometimes lead to reduced attention to full ingredient profiles, especially in combination therapies or multi drug formulations.

This naming trend demonstrates a balance between efficiency and ambiguity. It clearly improves comprehension for trained users by embedding structured linguistic cues that support faster recognition, recall, and professional communication. At the same time, it introduces risks because the same cues are not fully representative of complete drug information and can encourage misinterpretation or overconfidence in partial recognition. The system therefore functions effectively as a branding and communication tool, but it requires careful use alongside clear regulatory labeling and clinical verification to minimise confusion and ensure patient safety.

The second strand of the study is guided by the following research question: To what extent do the blending types help communicate the functional attributes to users the content of the

medicine?

This second research question sought to establish the connection between the blending types and how they contribute to meaning of the brand names. Three findings emanated from the study. The table below presents the functional attributes of the medicine brand names, classifications of the blending types, the frequency of the blending types and what they communicate to users.

Functional Attributes of medicine brand names	**Blending type**	**Frequency**	**Percentage**
Deviant/Arbitrary (Not related)	(1) Initial blends (2) Initial+ Initial + initial syllabic blends	80	20.2
Associative names (partially related)	(1) Initial+ Initial + initial syllabic blends	31	7.8
Directly related (descriptive, associative/suggestive)	(1) Initial syllabic + initial syllabic blends (2) Initial syllabic + medial syllabic blends (3) Initial-syllabic + final syllabic blends (4) Final syllabic + final syllabic blends	286	72.0
Total		397	100

Source: *Drugs registered in the Database of the Food and Drugs Authority of Ghana between 2010 and 2020 (2020)*

Cheramakara et al. (2020) note that product names often fall into distinct categories based on their stylistic and functional attributes such as descriptive which provides clear and direct information about the product's nature or purpose, making them immediately recognizable to consumers. Furthermore, associative or suggestive names, on the other hand, evoke certain qualities, emotions, or ideas linked to the product, creating a deeper connection with the target audience. In addition, deviant or arbitrary names, which may appear unconventional or unrelated to the product, rely on

their uniqueness to capture attention and stand out in the market. Lastly, fanciful names are entirely invented or imaginative, offering a creative and memorable identity that differentiates the product from competitors.

The pattern described where about 20.2% of medicine brand names fall under the deviant or arbitrary category has both helpful and harmful effects on how people understand medicines. On one side it can make recognition easier, while on the other side it can create confusion, increase risk, and reduce patient safety. In terms of aiding comprehension, these names can be short and easy to remember. Because they are often formed from syllables rather than technical drug information, they are simpler for both health workers and patients to pronounce and recall. In busy pharmacy environments this can help reduce delays when identifying products. It can also help differentiate products that contain similar active ingredients since each brand name stands out visually and phonetically from others. In this sense the names support quick recognition even if they do not carry meaning.

However, the same feature becomes a disadvantage when viewed from a safety and understanding perspective. These names do not provide any information about what the medicine contains, what condition it treats, or how it should be used. A patient who sees such a name cannot infer anything useful from it without additional explanation. This weakens transparency and increases dependence on pharmacists or package inserts. In settings where self-medication is common this becomes more problematic because patients may take medicines without adequate guidance. The situation is made more serious by the fact that some of these products are reported to be on the market despite not fully aligning with regulatory expectations from the Food and Drugs Authority and restrictions from the Pharmaceutical Council of Ghana. When naming does not follow clear standards, it becomes harder for both professionals and consumers to verify or interpret medicines correctly. Even if a product is registered, its name may still fail to communicate useful information to the public.

There are also clear safety concerns. When brand names do not indicate drug class or function, patients may confuse one medicine with another especially if names sound similar. This can lead to incorrect use, repeated dosing, or harmful drug combinations. Such risks are more likely in environments where people often self-medicate without professional supervision. The lack of

descriptive naming removes an important layer of protection that could otherwise guide safer use. This pattern can create broader confusion within the healthcare system. Pharmacists may need to spend more time confirming products and explaining their uses. Health communication also becomes more difficult because medicines cannot be easily grouped or understood based on their names alone. This places additional pressure on healthcare providers and increases the chance of errors in dispensing or consumption.

The category of associative medicine brand names, as described by Cheramakara et al. (2020), plays a mixed role in how medicines are understood and used. These names sit between fully descriptive and fully arbitrary naming systems, since they incorporate parts of words that may relate to ingredients, manufacturers, or dosage forms. On the positive side, this naming pattern supports partial comprehension. Because elements of meaningful words are embedded in the brand names, consumers and health professionals may gain some clues about the medicine. For example, a segment of a chemical ingredient or a reference to a manufacturer can help users form a rough idea of what the medicine might contain or how it might be used. This can improve memorability and make it easier for people to associate a product with a general therapeutic category. In pharmacy practice, such cues can also speed up recognition compared to completely arbitrary names.

However, the same feature introduces significant limitations and risks. Since these names only partially reflect the contents of the medicine, they can create a false sense of understanding. A consumer may assume they fully understand what the medicine contains when in fact they only recognize a fragment of the information. This partial transparency can lead to misuse, especially in situations where individuals rely on name cues rather than professional advice. There is also a risk of confusion in clinical and retail settings. Because associative names often reuse similar syllables drawn from ingredients or manufacturer names, different medicines may end up sounding or looking alike. This increases the possibility of dispensing errors, incorrect substitutions, or mistaken identity between products. Such errors are particularly dangerous in environments where pharmacists or over the counter drug sellers handle large volumes of similar products under time pressure.

In addition, while these names improve memorability, they do not guarantee clarity. The incomplete nature of the information means that consumers still need external guidance to fully

understand what the medicine does. This limits the effectiveness of the naming system as a standalone communication tool and maintains dependence on healthcare professionals for interpretation. Given these challenges, the suggestion for regulatory intervention is important. A coordinated policy from the Food and Drugs Authority and the Pharmaceutical Council of Ghana could help standardize naming practices. Such a policy could require that medicine names include clearer links to their active ingredients or therapeutic class while also maintaining distinctiveness to avoid confusion. A balanced approach would ensure that names are both informative and safe, reducing ambiguity while still supporting easy recognition and recall.

The argument by Kongo et al. (2025) highlights an important linguistic principle in pharmaceutical naming, namely that the internal structure of a brand name influences how much meaning users can extract from it. When names are built from multiple morphemes or syllabic components, they tend to carry more semantic information than simple or arbitrary forms. This supports the idea that more structured naming patterns can improve understanding and reduce ambiguity in drug identification. The finding that 72.0 percent of the dataset falls within descriptive and associative or suggestive categories strengthens this perspective. These names are constructed using recognizable elements such as initial, medial, or final syllabic blends that often reference ingredients, manufacturers, or dosage forms. Because of this partial or direct linkage to product characteristics, users are more likely to infer useful information from the names themselves. This can enhance comprehension at both consumer and professional levels, since the structure of the name provides cues that help situate the medicine within a therapeutic or production context. In practical terms, this type of naming system can reduce medication errors. When names reflect aspects of what the medicine contains or how it is formulated, it becomes easier for pharmacists and prescribers to distinguish between products. It also lowers the risk of confusion between similarly sounding or visually similar brands, since meaningful components in the name act as distinguishing markers. This is especially important in environments where multiple products circulate with related indications or overlapping ingredients.

However, even though these naming patterns improve clarity, they are not without limitations. The semantic value is still partial, meaning users may interpret more than what is actually intended. A name that suggests an ingredient or dosage form does not guarantee that the medicine is unique or

fully transparent in composition. This can still lead to assumptions that are not fully accurate, especially among consumers who rely heavily on brand names for decision making.

7. Conclusion

This study presents a detailed examination of the types and functions of blending strategies used in creating pharmaceutical brand names in Ghana. Using data from the Food and Drugs Authority of Ghana, six distinct blending patterns were identified, with the "Initial Syllabic + Initial Syllabic" pattern appearing most frequently. Each category of blend follows a clear linguistic logic, ranging from straightforward initial combinations to more complex syllabic fusions, and these patterns show the different techniques pharmaceutical companies use to build brand identities. The classification points to a systematic effort to combine elements such as active ingredients, manufacturers' names, and dosage forms into short and marketable brand names.

The functions of these blends go beyond mere aesthetics or branding. The analysis indicates that blends such as "CIPROBAY" and "KINAMET" not only sound appealing but also convey important information about ingredients and manufacturers, which supports informed choices by consumers and health professionals. This clarity, however, is not present in all cases. For example, initial blends such as "HB" and "NS" are often opaque and do not reveal key information, which can weaken effective communication. This variation raises questions about standardization and shows the need to match naming practices with the functional requirements of the pharmaceutical sector.

In general, the study highlights the importance of linguistic creativity in pharmaceutical branding while drawing attention to the need for clarity and functional communication in the formation of brand names. Blending encourages innovation and distinctiveness in a highly competitive market, but it should also meet its communicative purpose by reflecting the core attributes of the product. The findings suggest that more intentional and transparent blending strategies, especially those that clearly show product composition and origin, can strengthen brand recognition, improve consumer understanding, and ultimately contribute to better health outcomes.

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