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Obesity Management Procedures Mentioned in Independent and Pharmaceutical Studies: A Comparative Critical Discourse Analysis

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Abstract

Discourse is a social practice in which certain truths and versions of reality are represented, constructed and promoted through language use (Burr, 2015). Therefore, in order to understand people's relation with health, first, it is necessary to know how health care system and healthy life style are represented via associated discourse. Recent decades have observed rising influence of neoliberalism in reforming health care systems internationally. These reforms include: reduced role of government in public health, growing reliance on private health care services, prevailing competitive atmosphere among medical agencies, and individual's health related responsibilities (Baum & Murray 1999; Collyer, 2007, 1998, 1997; Collyer & White 2001). In addition to these reforms, Covid-19 pandemic has also drastically affected health care system and people viewpoints about medical authorities. Further, the wake of Covid-19 pandemic has exhaustively emphasized obesity-related health risks. A review on public health in England on the impacts of over weight on coronavirus found that overweight was highly linked with severity of Covid-19 and death (Public Health England, 2020b, p. 6). These findings set a direct connection between obesity and coronavirus disease, and emphasized the need of weight loss for life protection. Thus, it helped in increasing the business for commercial weight-loss organizations, and set an atmosphere of competition among them. These organizations and medical agencies tended to persuade people for medical treatment to get rid of obesity. For this purpose, they manipulated their discourse through various linguistic techniques as they competed for consumers (Heyes, 2006). However, The Competition and Consumer Act 2010 places restriction on the usage of false and misleading representation in advertisement (Australian Government, 2010). With this reference, The Medicines Australia Code of Conduct states that the entire information, claims and representations presented to health professionals must be correct and up-to-date, and should never be misled either by direct implication or by omission. For this purpose, total fifty research studies on obesity management, twenty-five from independent journals and twenty-five from pharmaceutical journals published since (2001-2022) were selected through purposive sampling for analysis. Van Dijk's (1980) macrostructure model was used to critically analyze the medical journals' recommendation on obesity management. In findings, it was found that independent journals emphasized health life choices and behavioural interventions to control obesity. On the other hand, pharmaceutical journals were found to be ambiguous in their prescriptions of healthy diet plans required for obesity management. Further, they exploited various macro-rules i.e. deletion, generalization, selection and construction in their discourse to manipulate the public. The use of these discourse techniques makes their social wrongs more indirect and difficult to identify and eradicate. The findings of study suggest that international health bodies (i.e., WHO) should pay attention towards these issues and should take steps to resolve it.

Keywords: Obesity management, CDA, Van Dijk's Macrostructure Model, Capitalism

Introduction

Stories bear tremendous creative power, since by means of stories we coordinate human activity, focus attention and intention, define roles, identify what is important and even what is real (Eisenstein, 2011). Unluckily, the present age is stuck in great troubles as we do not have good stories to live (Berry, 1988), especially, the health system is seriously devastated, wrong type of people are exerting a great measure of control over it nowadays. In consideration of these consequences, it is crucial to explore and aware the public about these health abuses before it is too late. Following upon, underlying study opens an intriguing window on fundamental health stories on which basic health practices and behaviours are based upon. Since these stories are deep rooted in health system, to dig out them first, it is inescapable to know how these stories are constructed and promoted in health system.

Discourse is a key mechanism by means of which these stories are not only constructed but also transmitted across generations and cultures (Stibbe, 2015). Therefore, discourse is a potential point of intervention. Discourse is an amalgamation of 'representations, performances and practices' through which meaning are produced, linked into social systems and legitimated. It is a contextually situated phenomenon in which power and knowledge are inextricably linked (Foucault, 1988, p. 94). Hence, to fully understand the idea of discourse, it is perquisite to understand power – knowledge linkages. Power, in Foucault's view, instead of a thing well-ordered by definite persons or institutions works inside the daily exchanges occurring between the people, (Burr, 2003), and a body is shaped by and occurs in a speech, becoming an essential position of power-relations when noticed through Foucauldian lens. Thus, power-knowledge relations interact in discourse to produce "regimes of truth": systems governing the rules of acceptable discourse and delivering status to those who speak truths. These

power/knowledge relations influence the societal beliefs and behaviours by manipulating what is generally taken to be normal/deviant, true/false, acceptable/unacceptable and even healthy/diseased in a particular society. Thus, discourse is a subjective medium resultant from existing knowledge and power relations, and in turn may also be used to produce, reinforce, sustain, or alter existent power-knowledge relations (Foucault, 1988, p.72). Bio power is a technology of power which is employed by the world governments for managing the public and to extend and preserve humans' life (Schirato et al., 2012). In this way, health centers become object of health knowledge where health professionals as key holders of 'healthy lifestyle knowledge' are in position of power to communicate health related information to their service users. By utilizing this power, they constitute health related truths and thus set the norms for healthy behaviors. However, they exploit this power to legitimize even arbitrary health related truths that have negative influence on public health (Foucault, 1988).

Literature Review

The discourse of advertisement is persuasive and manipulating in nature, so the language practiced in advertising is highly inspired by various linguistic communicative means (Villarino & Marina, 1997). The lexical choices made in advertising divulge certain product and social practice (Cook, 2001). Additionally, Cook proclaims that advertisement can disseminate information to inspire, prompt and influence the people, and ultimately change their viewpoints, feelings and behaviours. The power of language is fundamental in manipulating and governing customers' insight and appreciation about a product, and in this way, it can reshape the social practices that are reflected in people consumption habits both in positive and negative ways (Boyd, 2009). In sum, in advertising discourse, language primarily aims to convince the customers to gulp the bait and entice them towards the requisite product. Therefore, the main emphasis of power of advertising language includes the mode written or spoken, rhetorical mode, and what is being accomplished by means of various texts i.e. expository, persuasive and didactic (Halliday & Hasan, 1985). However, this ideology is deep-seated in advertising language in such way that customers have not even a sense of being manipulated. Being aware the potentially harmful effects of this practice, bodies involved in may call for immediate change. If the people involved in using destructive discourse are reluctant to change, then Critical Language Awareness can pressurize them to do so by raising stakeholders' awareness to take action against them. In past, a few studies have critically analyzed the discourse of articles and medical associations (Batool, et al., 2023). However, not even a single study has been undertaken to date to explore and explain the variable of pharmaceutical sponsorship which significantly influences the journals' studies. Further, despite of growing side effects of pharmaceutical inappropriate advertising on doctor-patient relationship, it is still not only going on but also making progress by leaps and bounds without any restriction. That is why, public awareness is necessary to stop it. For this purpose, biomedical journals' discourse as a relied source of information for doctor and patients is certainly worthy of critical analysis since it plays a crucial role in creating medical problems, legitimating certain responses and actions in this context (Brookes, 2022). Further, the accurate representation of a disease, its causes and controlling procedures by biomedical is of paramount importance because recipients accept the opinions, knowledge and beliefs of people and institutions whom they consider authoritative, reliable and credible source of information i.e. WHO, medical associations, journals experts, scholars, professionals and more reliable media reliable (Nesler et al, 1993).

Problem Statement

The present study aims to make a comparative Critical Discourse Analysis of obesity management procedures discussed in independent and pharmaceutical studies. With this reference, it is hypothesized that pharmaceutical journals' findings do not correspond with the findings of independent journals because pharmaceutical journals as representatives of pharmaceutical companies try to promote their products and clinical procedures for obesity management. For this purpose, they manipulate their discourse by employing various implicit persuasive techniques which consumers are ill-equipped to evaluate.

Research Questions

By utilizing the approach of CDA, this study addresses following questions.

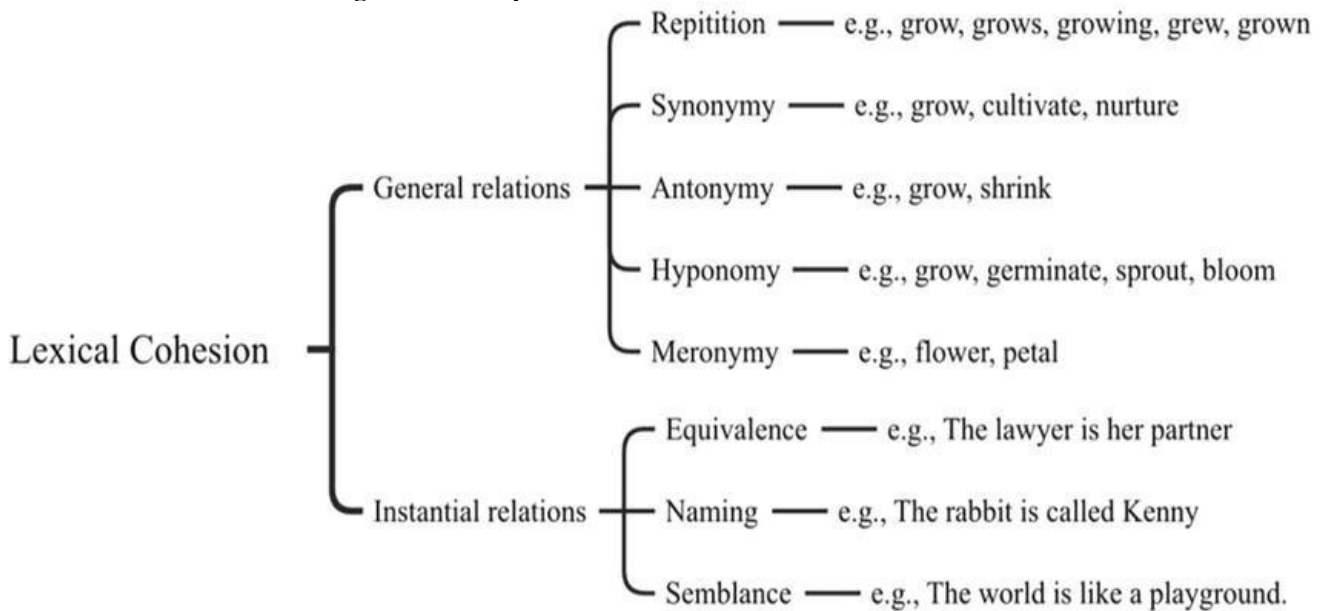
1. Which particular discourse techniques are used in independent and pharmaceutical studies in representation of obesity management procedures?
2. How do pharmaceutical studies make use of macro-rules construction and selection to manipulate the public?

Research Methodology

Creswell & Creswell (2017) define research design as a procedure of collecting, analyzing and interpreting the data. The present study is qualitative and descriptive in its nature. In this qualitative research, the researcher collected the required data from examining the documents (Creswell & Creswell, 2017), as a rigorous document analysis can provide a comprehensive description of a phenomenon, issues and events (Stake, 1995). The required data was collected from independent and pharmaceutical studies via purposive sampling because this sampling procedure was most of times used in qualitative researches (Saunders et al., 2018). Further, the purposively chosen data can provide more relevant and reliable data to address the research questions of study (Saunders et al., 2018). Accordingly, the present study purposively selected six medical journals, out of which three were independent journals: The Lancet, The International Journal of Obesity and Obesity Review, and remaining three were pharmaceutical journals: The New England Journal of Medicine, The American Journal of Medicine and The Annals of Internal Medicine. These journals are selected as they publish most relevant studies on obesity controlling and management procedures. Total 50 articles, 25 from independent journals and 25 from pharmaceutical journals published in the time span of (2000-2023) were included in present study. The present study undertook a comparative Critical Discourse Analysis of discourse techniques used in independent and pharmaceutical studies in representation of obesity management procedures. Medical journals are sponsored by pharmaceutical companies to provide imbalanced, insufficient, incomplete

and misleading information about health issues and their medical treatment (Hasman & Holm, 2006) as 70% of claims made in biomedical journals' advertising are found incorrect and ambiguous. The possible reason for this ambiguity in medical advertisement is persuasion of patients for pharmaceutical interests. Since from social psychological viewpoint, this persuasion works in subtle way, the general public remains unaware regarding persuasive stimulus and process of persuasion in DTCA (Chartrand, 2005). However, this persuasion intent of advertiser can be better understood by analyzing an utterance with its relation to rest of linguistic context in which it occurs. Accordingly, to explore hidden meanings, Halliday and Hassan (1973) model of cohesion has been applied on the discourse of medical journals. This model is illustrated in figure below.

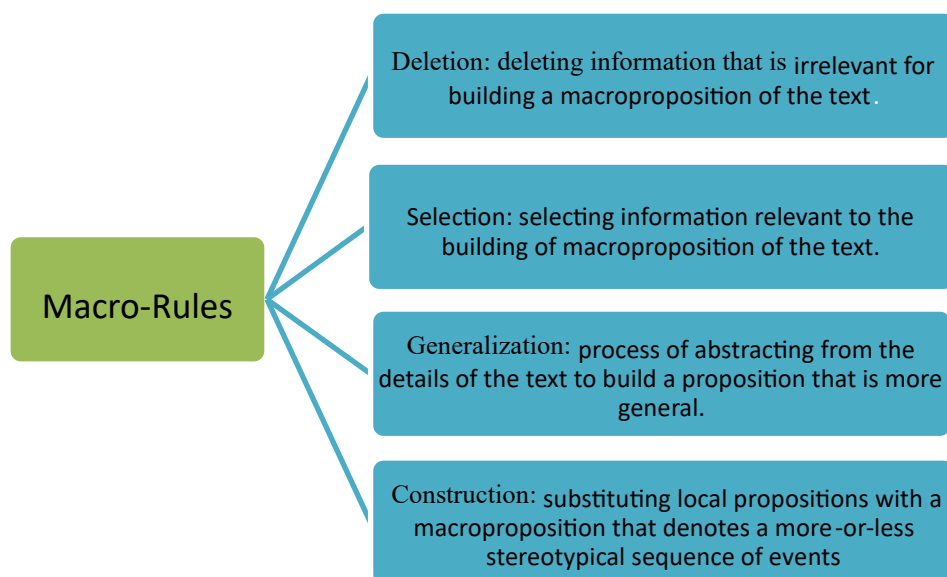
Figure.1 Halliday and Hassan Model of Lexical Cohesion



(Categories of lexical cohesion (Halliday & Hasan, 1976, 1985))

For this purpose, first collocation patterns analysis of obesity management procedures mentioned in independent and pharmaceutical studies was made. Afterwards, the macro semantic model of four macro-rules: deletion, selection, generalization and construction proposed by Van Dijk (1980) were applied to obtained findings of collocation analysis (Shah & Haider, n.d). This interdiscursive analysis of medical texts will not only explore social elements underlying relevant social wrong but also highlight the dialectical relations between semiosis and these social elements. The four macrorules of semantic model are illustrated in figure below.

Figure.02 Van Dijk's Macrostructure Model



Analysis and Discussion

Teun van Dijk is leading figure in the field of discourse studies who has proposed various theoretical frameworks for conducting critical discourse analysis, and the model of macrostructure (1980) centerpiece out of them. In macrostructure, the

term macro refers the description of text on global level, and macrostructure is the structural or thematic organization in which topics are arranged in hierarchical 'top-down order' from overall meanings to more specific ones (Carvalho, 2000). The structural organization of a text is crucial in defining of what/ who is at stake, and a general interpretation of a problem. An in depth exploration of organization of text is possible by means of macro-rules: Deletion, Generalization, Selection, and Construction. Next, all these macro-rules are studied one by one under the model of macrostructure (1980).

Use of Deletion

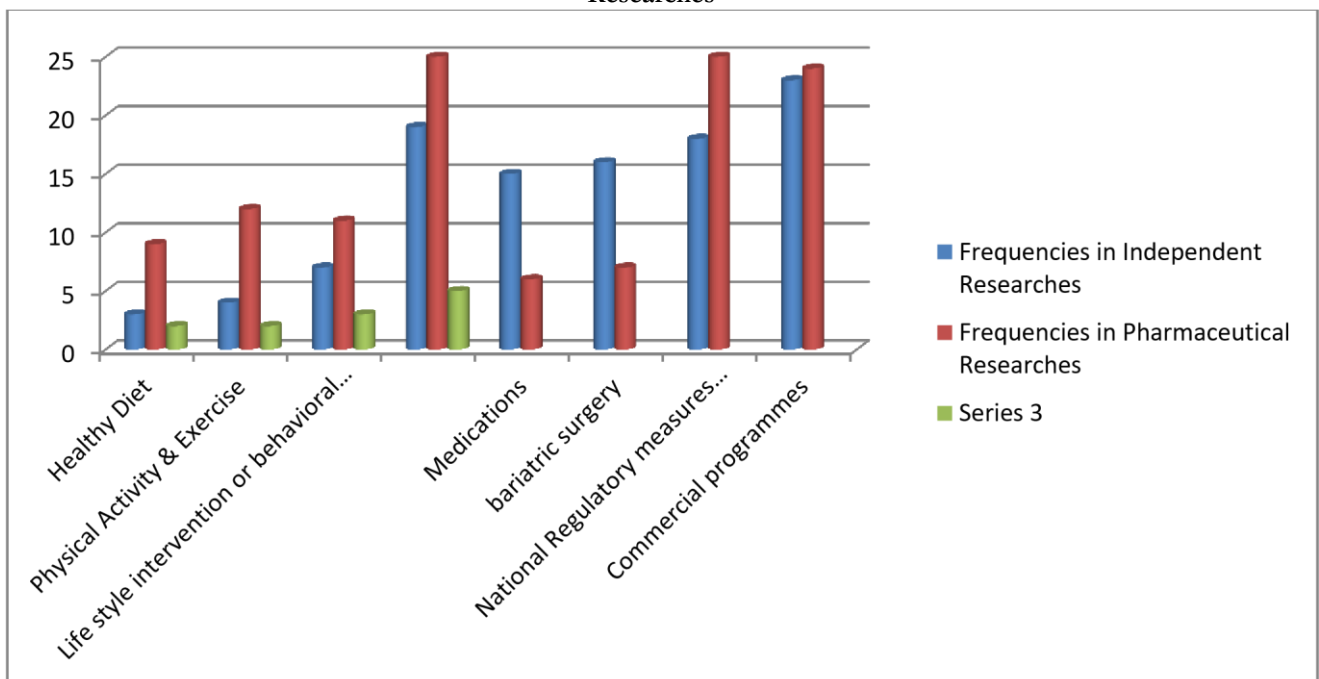
In deletion, irrelevant information, specific details and at times complete propositions are omitted from a text (Dijk, 1980). In this way, it addresses the question which particular objects or characters are omitted while organizing a text. Here, this macro-rule of deletion is applied on independent and pharmaceutical studies' proposed obesity controlling recommendations to identify the recommendations ignored from their discourse. The subsequent table 1 and figure 3 present the compared frequencies of deletion used in independent and pharmaceutical studies in the representation of obesity management procedures.

Table. 1 Comparative Frequencies of the application of Macro-rule, Deletion in Independent and Pharmaceutical Researches

Deletion of Obesity Management Procedure	Frequencies in Independent Researches	Frequencies in Pharmaceutical Researches
Healthy Diet	3	9
Physical Activity & Exercise	4	12
Life style intervention or behavioral training (eating habits, reducing restricting sedentary habits, reducing TV watching, active transportation)	7	11
Community or school based initiatives for promotion of healthy lifestyle (Food and Nutrition Surveillance in schools.)	19	25
Medications	15	6
bariatric surgery	16	7
National Regulatory measures including improving nutritional information by Nutrition labeling or restricting the marketing of unhealthy foods	18	25
Commercial programmes	23	24

Source: Researcher

Figure. 3 Comparative Frequencies of the application of Macro-rule, Deletion in Independent and Pharmaceutical Researches



Source: Researcher

From above findings (table 1) it is evident that pharmaceutical journals studies frequently employed the technique of deletion to hide some information on obesity management. For instance, the independent studies suggested avoiding soft drinks, salty snacks and saturated fats to prevent obesity whereas pharmaceutical journals omitted these food details. Advertisement influences consumers' food preferences by creating positive evaluation regarding various products (Cairns et al., 2013), and frequent exposure to food items through advertising leads to non-cognitive but an habitual behaviors (Cohen, Babey, 2012; Gardener, 2014). Lobstein & Dobb (2005) in their survey of advertisement showed that advertisement of food on television resulted high promotion of various food products like confectionery, soft drinks, biscuits, sweetened cereals, snacks and fast food in public in USA, Europe and Australia. That is why; the independent studies have highlighted the need of taking regulatory measures to check the publicizing of unhealthy foods. Secondly, to create public awareness about health, independent studies emphasized to conduct counseling and training sessions on continuous basis. Thirdly, community and school based initiatives which are found effective (Adamson, Spence, Reed, et al. 2013) in improving dietary intake were present in independent studies' recommendations. However, these three recommendations, that is, health related training sessions, regulating the advertising activities and community based initiatives are degraded by pharmaceutical studies. Likewise, improving the diet quality, taking exercise and restricting the sedentary behaviors were suggested in most of independent studies, no doubt, they are discussed in pharmaceutical studies as well but with less frequencies. In sum, most of non-medical procedures necessary to thwart the obesity were omitted from pharmaceutical studies, however, medications and surgical procedures were emphasized with highest. The obtained findings of macro-rule deletion give the impression that pharmaceutical studies persuaded the public to go for pharmaceutical obesity management procedures. Contrastively, independent studies in constructing a strong macrostructure about the obesity management focused that overall and comprehensive approach is needed to take in which all suggestions are necessary to consider and nothing is irrelevant.

Use of Generalization

Subsequently, for analyzing the generalization used in journal studies in explanation of obesity management procedures, first a collocation analysis of specified obesity management procedures was made.

Table.2 Collocations used in Independent and Pharmaceutical Studies in Description of Obesity Management Procedures

Obesity Management Procedures suggested in Independent Research Articles		Obesity Management Procedures suggested in Pharmaceutical Research Articles	
Recommendations	Collocations used with Recommendations	Recommendations	Collocations used with Recommendations
Take health diet	Diet (low-fat, low high low carbohydrate or protein, and glycaemic index, balanced deficit diets)	Take healthy food	-----
Take physical activity	i.e. walking, playing, swimming or aerobic exercise	Physical activity	-----
Behavioral Interventions	restricting sedentary habits i.e. TV viewing, video games and internet surfing hours	Behavioral Interventions	i.e. self monitoring, setting weight-loss goals, addressing barriers to change, and strategizing
Medications	bupropion, phentermine plus topiramate, as well as orlistat, liraglutide, semaglutide, and tirzepatide	Medications	Sibutramine, orlistat, phentermine, probably diethylpropion, bupropion, probably fluoxetine, and topiramate
Reduction in diets	Soft drinks, salty snacks and high glycaemic foods Saturated fats	Reduction in	Fat Intake
Food-Policy actions	Regulatory measures including improving nutritional information by Nutrition labeling or restricting the marketing of unhealthy foods	Obesity related health risks	cardiovascular disease, pseudotumor cerebri, sleep apnea, orthopedic abnormalities, type 2 diabetes, and hypertension

bariatric surgery	include gastric bypass, sleeve	bariatric surgery	gastric bypass
	gastrectomy and gastric banding		
Psychological Interventions	i.e. goal setting, assertiveness training	Psychological	Factors

Source Researcher

The above collocation analysis (table 12) demonstrated that collocation used in pharmaceutical studies made their obesity controlling recommendations more ambiguous and thus, deprived the readers from the specific details about the appliance of these recommendations. In this way, the pharmaceutical studies emphasized the global meanings by building their macro propositions in a way in which they substituted the minor propositions with more general and abstract terms not comprehensible for general readers. Cognitive theory (Lakoff & Johnson 1980; Lakoff & Wehling, 2012), states that the meaning are based in body, and more basic terms related to actual world of experience have more powerful impact on mind by invoking clear image of object specified than abstract and superordinate terms. For instance, the sequence of propositions that is, healthy food, physical activity and psychological factors mentioned in pharmaceutical studies' recommendations were superordinate terms which did not include the particular details of food items which the people should eat to sustain check and balance of a stable wait. Likewise, which types of physical activities are requisite to be practiced by individuals to get rid of obesity are not specified. Thus, they are concealing the diets rich in fat to count the consumption of nutrients and calories. On the other hand, independent studies shared every bit of information related to dietary intervention (i.e., reduction of saturated fats, salty snacks and high glycaemic foods) and physical activities (i.e. swimming, walking and aerobic exercises), so that the individuals easily practice them to avoid obesity and its following risks. Thus, they build a strong macrostructure by offering all relevant details about dietary intake and exercises to control obesity. In sum, independent Journals' studies employed collocations to make their obesity management procedures more feasible for public to follow. However, collocations used in pharmaceutical journals' discourse make their obesity related recommendations more ambiguous for patients to comprehend and practice. Consequently, the people are unable to take any corrective measures to avoid the obesity.

Now these obtained findings related to the appliance of macro-rules of deletion and generalization are discussed in light of scholars' arguments. According to Baudrillard (1994) discourses are always partial in representation and construction of various aspects of social life. They bring various elements into a configuration and omit the others via erasure by considering them less important. In this regard, Baudrillard has discussed three different types of erasure. First is void, where some important elements are entirely excluded from text; second is mask, where some elements are replaced with their own distorted version, and third is trace in which some aspects are partially removed from text but still exist. Examples of all these three types of erasure were observed in medical discourse of pharmaceutical studies. For instance, independent studies' preferred recommendations in prevention of obesity e.g. community and school based initiatives, regulatory measures ordering the advertising practices are entirely overlooked from pharmaceutical studies. Likewise, improving the diet quality, taking exercise and restrict the sedentary behaviors are exemplification of trace as they are recommended only in a few pharmaceutical studies. The examples of masks can be drawn in macro-rule of generalization where obesity management procedures are made confusing by means of collocations. In Stebbe's view (2015), when a message is promoted far and wide then it may infiltrate deep into public's minds and becomes a story that they live by, and this story has strong influence on people's behavior. Thus, by deleting various recommendations regarding obesity management, pharmaceutical studies want to create this impression in readers' minds that these recommendations are unworthy of consideration, and medication and surgery are only suitable for controlling obesity. Further, if these are consistently omitted from medical discourse, they cannot be taken in consideration in future health policies and decision with important implications.

Use of Selection

Discourse does not only represent the realities at stake but also constitute and manipulate them (Fairclough, 2003). Pharmaceutical studies manipulate their discourse by deploying various discursive strategies. Manipulation means intervention on reality to achieve a certain goal. The main intervention which an author undertakes involves selection and compositions. Researches in cognitive psychology and artificial intelligence have implied that events or objects are never viewed from their discrete components rather from their overall views frames, patterns for forming the public cognition of reality. Frames are underlying ideas which assign coherence to separate elements of text and, thus, the texts are organized or constructed according to certain perspective or framing (Gamson et al., 1992). In process of text production, framing encompass selection and composition (Entman, 1993). Selection encompasses the practices of addition and deletion of certain opinions, judgments and facts whereas composition is a particular arrangement of linguistic elements in framing certain reality in a specific angle to attain definite effect (Carvalho, 2000). The recognition of these frames or schemas embedded in medical discourse helps in better interpretation of its underlying reality or ideas.

Table. 3 Frequencies of Obesity management procedures in Independent and Pharmaceutical Journals

Obesity Management Procedures	Frequencies in Independent Researches	Frequencies in Pharmaceutical Researches
Community or school based initiatives for promotion of healthy lifestyle (Food and Nutrition Surveillance in schools.)	6	0
Medications	10	19
bariatric surgery	9	18
National Regulatory measures including improving nutritional information by Nutrition labeling or restricting the marketing of unhealthy foods	7	0

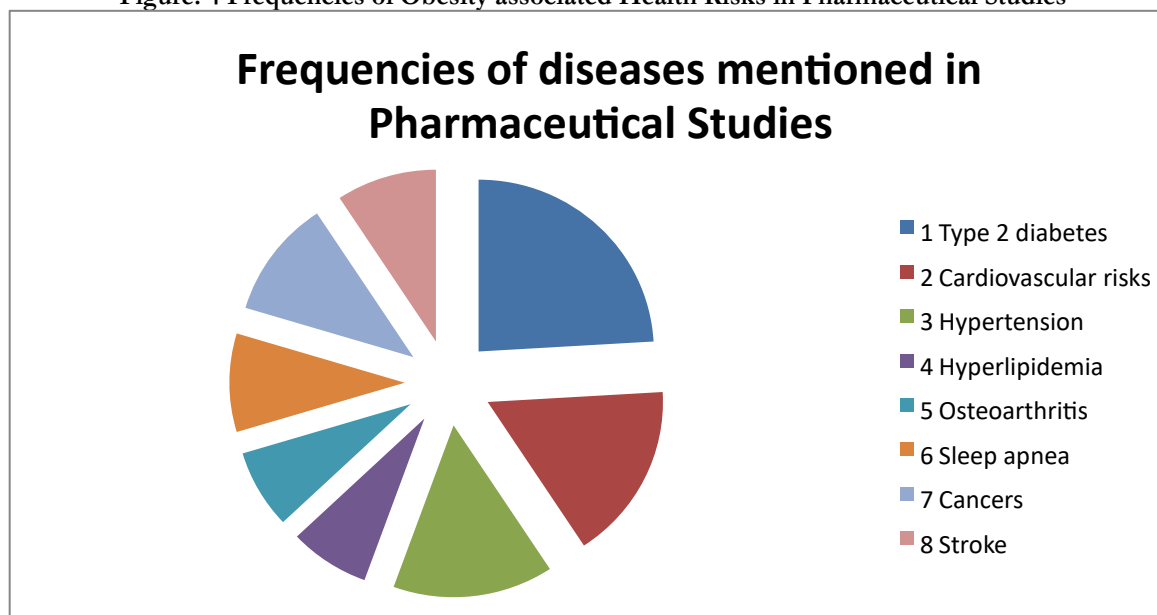
Source: Researcher

A crucial aspect in analysis of discourse is the perceived influence of actors in constructing the overall meanings of a text which leads to identify which perspective is more dominant and influential (Carvalho, 1999). From above obtained frequencies (table 3), it is evident that pharmacologic and surgical obesity controlling procedures are accentuated in pharmaceutical studies with most highest frequencies (i.e. 19 and 18 times), however, the school based initiatives and national measures including improving nutritional information by nutrition labeling or restricting the marketing of unhealthy foods are completely omitted. This selection or deletion is not unconscious rather a deliberate process as authors make selective representation of reality and make it more salient to endorse certain moral evaluation and a treatment (Entman, 1993). Thus, the highest obtained frequencies related to medication and surgery implied that pharmaceutical studies appeared to popularize surgical and pharmacologic obesity treatments among the public. Secondly, obesity associated health risks cardiovascular disease, pseudotumor cerebri, sleep apnea, orthopedic abnormalities, type 2 diabetes, and hypertension are not only referred in almost all pharmaceutical studies but also exaggerated with detailed description. The obtained frequencies with reference to various obesity associated diseases are tabulated and graphically represented respectively.

Table. 4 Frequencies of Obesity associated Health Risks in Pharmaceutical Studies

Sr.no	Obesity associated health risks	Frequencies in Pharmaceutical Studies
1	Type 2 diabetes	13
2	Cardiovascular risks	9
3	Hypertension	8
4	Hyperlipidemia	4
5	Osteoarthritis	4
6	Sleep apnea	5
7	Cancers	6
8	Stroke	5

Source: Researcher

Figure. 4 Frequencies of Obesity associated Health Risks in Pharmaceutical Studies

Source Researcher

The above findings (table 4) demonstrated that the type 2 diabetes was discussed in pharmaceutical studies with highest frequency (i.e. 13 times). The frequencies with reference to other obesity diseases, that is, cardiovascular risks, hypertension, hyperlipidemia, osteoarthritis, sleep apnea, cancers and stroke are 9, 8, 8, 4, 4, 5, 6 and 5 respectively. From the above obtained frequencies, pharmaceutical studies seem to be more interested in describing obesity associating diseases than its management procedures. This is actually manipulation of discourse which involves authors' intervention in selection and representation of a specific angle of reality (Entman, 1993), and this manipulation is never value-free rather it is made to achieve certain effect or goal by framing certain reality (Carvalho, 2000). Thus, the pharmaceutical studies focused obesity associated diseases to distress the people, so they go for physician as soon as possible. As manipulation did not only involve selection but also construction, so the construction rule has been discussed now.

Use of Construction

Construction is specific organization of elements in discourse to create certain meanings. Under this rule one proposition can be built up from a majority of propositions (Carvalho, 2000). In pharmaceutical studies, obesity related diseases and its pharmacologic controlling procedures are well elaborated via rule of construction. Its supporting examples extracted from the corpus are provided below.

Example.1 (Overweight Children and Adolescents)

Childhood overweight is associated with a variety of adverse consequences. For example, more than 60 percent of overweight children 5 to 10 years of age in Bogalusa, Louisiana, had at least one risk factor for cardiovascular disease, such as elevated blood pressure or serum insulin levels or dyslipidemia, and 25 percent had two or more risk factors.⁴ Type 2 diabetes now accounts for up to 45 percent of all newly diagnosed diabetes in pediatric patients⁵ and is more common in ethnic and racial groups with higher rates of obesity, such as Native Americans, blacks, and Mexican Americans. Conditions associated with overweight, such as sleep apnea and gallbladder disease, tripled in children and adolescents between 1979–1981 and 1997–1999.⁶ Although childhood-onset overweight accounts for only 25 percent of adult obesity, overweight that begins before age eight and persists into adulthood is associated with a mean body-mass index of 41 in adulthood, as compared with a body-mass index of 35 for adult-onset obesity.⁷

Example.02 (REVIEW Current Views on Obesity)

Obesity is also associated with abnormal pulmonary function, including sleep apnea, and progressing to the obesity/hypertension (pickwickian) syndrome.⁸ Overweight men have significantly higher mortality rates for colorectal and prostate cancers, and overweight women have significantly higher rates of endometrial, cervical, ovarian, gall bladder, and breast cancers.² The incidence of osteoarthritis and gout increases with increased weight, even in non-weight-bearing joints. Furthermore, all risks associated with obesity are increased with increasing weight and are very high in patients with severe obesity, who have a body mass index (BMI) that is >40 or who weigh 100% above ideal body weight.⁹

In discourse, particular elements are made more prominent by means of various features like large size, tonal values and foreground place to draw audience's attention. In the same way, various linguistic features are combined together to construct salience patterns that make certain participants more highlighted (Stibbe, 2015). Meanwhile, other participants are overlooked. In examples 1 and 2 the obesity-associated complications are comprehensively elaborated with age and weight reference. Thus, the facticity is developed by using **salience pattern** (i.e. well elaboration of obesity related diseases). All these obesity related

risks develop such a horrifying image of obesity in patients' minds that they want to get rid of obesity as soon as possible for which doctor's consultation is considered best solution while health life style is not taken seriously. Likewise, they elevated the pharmacologic and surgical obesity management procedures by discussing their weight loss outcomes and related benefits, Relevant examples are given below.

Example 01 (Meta-Analysis: Surgical Treatment of Obesity)
Benefits of Surgery for Weight Loss
Weight Loss and Maintenance

We identified 2 RCTs that compared bariatric surgery with a nonsurgically treated control group. The first RCT compared horizontal gastropasty and diet with diet alone (27–29). This RCT generated 3 articles that reported net weight loss at 6 months (27), 24 months (28), and 5 years (29). At 6 months, weight loss did not differ between the 2 groups, but at 24 months of follow-up, the net weight change from baseline greatly favored surgical therapy (30.5 kg vs. 8.0 kg for surgical and nonsurgical therapy, respectively). We also identified another RCT that compared jejunoileal bypass with “medical treatment” (otherwise unspecified) in 196 patients (30). At 24 months of follow-up, the mean difference in weight loss greatly favored surgical therapy (mean difference, 37 kg). These studies were con-

In given examples different medications of obesity are elaborated with specific details of weight loss. This detailed description of medical approaches in pharmaceutical journals' studies is elaboration of Kress and Leeuwen's view (2006) according to which something draws reader's attention to itself because of its size and foreground place in representation. Thus, the purpose of such vivid and exhaustive representation of medication with their results is to draw people attention towards it.

At the end of this analysis, it is deduced that pharmaceutical journals construct the facticity of medications and treatment in a wide range of recommendations by using various macro-rules i.e. generalization, construction and deletion. If a facticity of description is widely spread, then it can attain hegemony, and is considered a reality rather than constructed for particular purpose (Chouliaraki & Fairclough, 1999, p. 5). Thus, through their discourse, pharmaceutical journals try to establish this facticity that medications and surgical procedures are best way out for getting rid of obesity, and hegemony medical corporations is tried to constructed and maintained in health care system through such discourse practices.

Findings

Findings obtained from Van Dijk's macro-rules analysis are explicated here in detail.

A comparative analysis of independent and pharmaceutical studies with reference to appliance of macro-rule of deletion, it was found that pharmaceutical studies made more use of deletion in presentation of obesity management procedures than independent studies. For instance, improving diet, taking exercise and restricting the sedentary behaviors were recommended in independent studies with highest frequencies, but in pharmaceutical studies they were suggested with less frequency (see Table. 1). In addition, various regulatory measures (i.e. Nutrition labeling or restricting the marketing of unhealthy foods) and community based initiatives (i.e. Food and Nutrition Surveillance in schools) which were found effective in management of obesity were completely omitted from pharmaceutical studies' findings via use of deletion. Specific distribution of deletion with reference to other recommendations can be observed in Table 1.

Besides deletion, pharmaceutical studies made frequent use of macro-rule generalization in description of various obesity regulatory measures. For instance, the collocation analysis of obesity management recommendations indicated that pharmaceutical studies mentioned superordinate terms (i.e. health food, physical activity) without their specific description which were, although, discussed in independent studies.

As far as macro-rule, selection is concerned; it is a selective representation of reality via insertion or deletion for making for its prominent (Entman, 1993). Pharmaceutical studies made use of selection in elaboration of obesity associated health threats i.e. diabetes, hypertension, stroke and cardiovascular diseases (see Table 4 and its pharmacologic controlling procedures. First, they exaggerated obesity related diseases by their exhaustive and dense scientific description then they tried to convince the public for medications and surgical treatment of obesity by suggesting them with highest frequencies (i.e. 19 and 18 times). The use of macro-rule construction in pharmaceutical studies is very similar to macro-rule of selection. Obesity related diseases and its pharmacologic controlling procedures are well elaborated with help of macro-rule construction. Thus, pharmaceutical journals exploited various macro-rules i.e. deletion, generalization, selection and construction in their discourse to manipulate the public. Further, the use of these discourse techniques makes their social wrongs more indirect and difficult to identify and eradicate.

The accurate representation of a disease, its causes and controlling procedures in biomedical journals' studies is of paramount importance because recipients take for granted the opinions, knowledge and beliefs of people and institutions whom they consider authoritative, reliable and credible source of information i.e. WHO, medical associations, journals' experts, scholars and professionals (Nesler et al, 1993). However, the commercial interests of pharmaceutical companies have undermined the credibility of journals' information. That is why, Richard Smith, an editor of journals called medical journals an extension of 'marketing arm of pharmaceutical companies. These pharmaceutical companies pressurize leading medical journals to publish industry-sponsored supplements and to avoid publishing the content which is contrary to marketing interests of company (Dyer, 2004). Secondly, authors of the clinical trials have financial support from concerned industries. For instance, according

to Norman Bauman, freelance authors are specially hired for writing review articles (Rampton & Stauber, 2002) because mostly physicians access review articles to get well informed about latest available drugs (Newman, 2002). Moreover, some of these journals' publications are solely to secure advertising revenues from pharmaceutical companies because advertising is a key element of pharmaceutical industries' marketing across the world and advertising in biomedical journals is estimated by industry to be its most profitable marketing strategy with an estimated return on investment of \$5 for every dollar (Mintzes, 2002). Thus, this idea of DTCA as source of awareness for people regarding various diseases and their associated treatments is completely unconvincing as DTCA is structured by pharmaceutical companies whose keen interest is to increase their profit by inciting the people via DTCA to purchase their products (Wilkes, Bell & Kravitz, 2000; Calfee, 2002). The results of present study also corroborate with these researches. For example, findings obtained from critical discourse analysis of obesity management procedures discussed in pharmaceutical studies indicated that that pharmaceutical journals distorted medical information for commercial interests. They made exaggerated claims about obesity controlling medications and presented them in more favourable form by deploying various linguistic techniques that is, attributive relational processes (see Table 6) and appreciation (see Table 8) (Bucher et al., 1994; Villanueva et al., 2003).

Discourse is a social practice in which certain truths and versions of reality are hypothesized, represented and promoted via language use (Burr, 2015). Further, power-knowledge are joined together in the discourse practice (Foucault, 1988), to convince the audience about presented truth. Similarly, medical studies' authors avoid to express their subjective interpretation in presentation of recommendation on obesity management rather they endorse the viewpoints of academic experts of medical field (Martin & Rose, 2003). That is why, the frequencies of heterogloss use are found higher in their studies as is shown in table 9.

According to Huges (1987), advertisers attempt to conceal their persuasive intentions under the use of various camouflaging devices as they offer, recommend, advise and suggest instead of giving direct orders. Thus, the linguistic devices used in advertisements are fallacious representation of free enterprise in which language is exploited for marketing interests of manufacturers/ advertisers. Likewise, it is evident from Van Dijk's macrostructure analysis that pharmaceutical studies make the use of macro-rules that is, deletion, generalization, selection and construction for manipulation purpose. Under the deletion rule, they entirely omit a few non-medical obesity management recommendations (see Table 1), and make the others ambiguous and difficult to interpret by laymen via generalization (see Table 2). Similarly, by means of macro-rules selection and construction, they exaggerate the obesity related diseases, and promote pharmacologic and surgical obesity treatment. These foregoing observations with reference to manipulation of medical discourse via various discourse techniques are, further, confirmed by the following researches (Bucher et al., 1994; Villanueva et al., 2003; Hasman & Holm, 2006; Kusuma et al., 2007).

This practice has far reaching effects on doctor-patient relationship successively public health (Mintzes et al., 2003; Gilbody et al., 2005; Hasman & Holm, 2006). The studies emphasize that exposure to DTCA promotes excessive and inappropriate pharmaceutical use in patients. By exaggerating the risk factors of diseases drug advertising increase patients' anxieties and fear regarding health issues, and try to promote this impression in public that medicine is one and only solution of this problem (Hasman & Holm, 2006). Despite doctors' expressed confidence that they are immune from pharmaceutical companies' efforts to influence their prescribing behaviours, a substantial body of theoretical and empirical literature findings prove it wrong. In survey of world health organization (WHO) 89% physicians stated that DTCA did not enhance doctor-patient relation (Norris et al., 2005). In a metaanalysis, Gilbody et al. (2005) found although DTCA increased drug prescription, medicine was not a recommended treatment and no evidence of overall improvement in health was noted in result of the use of that drug. Further, he reviewed the latest studies conducted on impact of DTCA, and concluded that DTCA increased physicians' burden regarding patients' treatments because they lost their authority over the patients having DTCA exposure. Furthermore, studies have illustrated that DTCA encourages only products having consumers' appeal (Fisher et al., 2008). For instance, Hensley found in her study that physician's decision regarding a painkiller was made because of industrial claim rather than science (Hensley, 2002). Therefore, researchers suggest that information presented in DTCA is not appropriate to implement without physicians' proper consultation. Further, some scholars' recommendations to fight against the obesity are pinpointed here.

Nutrition policies, Supremacy and Accountability

Tackling of obesity needs a rational nutrition policy to promote public health and to thwart poor nutrition in its forms. Nutrition policies like setting explicit nutrient morals for products, introducing the system of accountability i.e. financial rewards and forfeits to assure reformulation, over sighting of marketing activities on regular basis and using public-sector buying powers to influence marketing prices must be available in all countries (Lobstein et al., 2015). In this regard, a systemic review (Hawkes et al., 2015) findings has suggested that health connected food taxes have the potential to influence the consumers' purchasing behaviours. Further, mandatory nutrition labeling including calorie and ingredients details of available food items and products in market have been reported to improve nutrient profile of products and consumers' healthy food choices (Bruemmer et al., 2012). This labeling (Hawkes et al., 2015) should be clear, explicit, comprehensible and not misleading.

Regulation of advertisement activities on Social Media

Advertising has influence on consumers' food preferences by creating positive associations (Cairns, Angus, Hastings & Caraher, 2013). Frequent exposure to food items via advertising leads to non-cognitive but an habitual behaviours (Cohen & Babey, 2012; Gardener, 2014). Lobstein and Dobb (2005) in their survey of advertisement showed that advertisement of food on television has resulted high promotion of various food products like confectionery, soft drinks, biscuits, sweetened cereals, snacks and fast food in public in USA, Europe and Australia. Evidence from the Middle East has suggested that the advertising of food and beverages on television is most of time occurs between 1400–2100 h when children watch the television, and

children who watch such ads more have enhanced preference for such food (Boyland & Halford, 2013). Therefore, such advertisement must be regulated through proper legislation.

Education and Training of Health Professionals

In 2007, the US Association of American Medical Colleges recommended professionals' education on obesity and its associated comorbidities. In 2010, the Royal College of Physicians of UK also emphasized all health experts to identify obesity patients and manage them. Main identified regions for professional education and training include: obesity-associated comorbidities, motivational training and behavioural techniques i.e. diet and physical activity of obesity management (Sobal et al., 2006)

Community based Programs and Initiatives

Various Programmes, such as the Mind, Exercise, Nutrition, Do it (MEND) Programme⁹³ and a multi-component community-based childhood obesity intervention known as EPODE, have effectively improved child weight status and could serve as scalable community based programmes that extend the reach of health-care delivery systems. An important adaptation of EPODE in the Netherlands has linked health care and obesity prevention by including health professionals in community-based initiatives to increase healthy eating and physical activity. This type of programmes must be launched in whole world communities to prevent the obesity. Schools as community institutions have effective setting for young ones. There is evidence (Hanks, Smith & Wansink, 2012; Wansink & Hanks, 2013) that school policies can work by motivating the children to reconsider their food choices at point of purchasing. For instance, in UK, a comprehensive school approach based on food standard launched in 2008 significantly improved dietary intake in children (Adamson, Spence, Reed, et al. 2013).

Conclusion

Under the growing impact of capitalist and neoliberalism, pharmaceutical journals manipulate their discourse by means of various discourse techniques, that is deletion, generalization, selection and construction to serve and promote capitalists' interests whereas ideology of healthism appears more dominant within the studies of independent journals. Independent researches tend to urge the individuals to improve their health related behaviors and make healthy 'lifestyle' choices to avoid obesity and its relevant risks. On the other hand, pharmaceutical studies try to elevate the pharmacologic and surgical obesity treatment procedures of obesity by the use of macro-rule of selection and construction. In this way, they seem to make obesity patients totally dependent on physicians' prescriptions and medications. Whereas the independent studies' precise and clear cut description of obesity controlling recommendations make the people more self-reliant as from their texts it is apparent that everyone can maintain healthy weight by avoiding unhealthy food and following a healthy diet plan. Further, from their discourse, it can be interpreted that unhealthy eating behavior is either carried out by ignorance or choice can be modified by proper instructional plan and health guidelines. Most importantly, a collective approach is needed on individuals, national and international level to fight against obesity.

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