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Health Related Quality of Life Using Commercially Prepared Food Supplements, Multivitamins and Minerals — A Meta-Analysis

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Through the six domains of the health-related quality of life (HRQOL) — physical, psychological, level of independence, social relationship, environment and spirituality or religion — ten out of one hundred randomly selected studies were analysed and evaluated as a theoretical outcome of self care using health products such as food supplements, multivitamins and minerals.

A reconstructed HRQOL tool was used in the qualitative and the quantitative analysis and evaluation of the ten selected studies. A Critical Appraisal Skills Programme tool was also used in making sense of the evidences of the study trials. The Population, Intervention, Comparison and Outcome guide focused the protocol for the selection of the studies used in this meta-analysis. A probability sampling generated a uniform distribution of the populations. The manner of consuming or the route of administration, the volume and the preparation of commercially prepared health products were neither analysed nor evaluated as the exclusion criteria.

Of the ten studies, nine gave a high significance to the six domains of the (O.R. = 90% / p = <0.05). The six domains of the HRQOL showed a significant relationship to the extrinsic factors — age, gender, health status, location of residency and ethnicity/genetic.

Key words: HRQOL; self care; health products; qualitative and quantitative meta-analysis

Multivitamins, minerals and food supplements are used as health products all over the world — for children with Rickets in Nigeria (Thacher *et al.* 1999), for human immunodeficiency virus patients in Tanzania (Fawzi *et al*. 2004), for health conscious adults in United States of America (Radimer *et al*. 2004), and for athletes in Norway (Sundgot-Borgen *et al*. 2003) and in the United Kingdom (Nieper 2005); for health promotion and illness prevention in Malaysia (Aziz & Tev 2009), and for patients with cancer and cardiovascular disease in China (Blot *et al*. 1993) and Japan (Ishihara *et al*. 2003). Health products cater to these populations' individual needs to achieve a qualitative life.

This study aims to evaluate self care (Orem 1991) using health products in achieving the six domains of the Health Related Quality of Life (HRQOL) — physical, psychological, level of independence, social, environmental and spiritual/religion.

According to the World Health Organization (WHO) (2004), the six domains of the HRQOL are somehow affected by five extrinsic factors — age and location of residency, gender, health status and ethnicity/genetics — contributing to the usage of commercially prepared multivitamins, minerals and food supplements.

On account of these issues, this study also aims to analyse the HRQOL's six domains affected by the five extrinsic factors.

The purpose of this meta-analysis study is to promote the *Self Care Theory* (Orem 1991), beneficial for health that analyses and evaluates quality of life (QOL) (WHO 2003/2010). According to Orem (1991), self-care is to initiate time frames of lives in one's own behalve based on specific needs.

A Venn diagram is best used to illustrate the variables and their logical relations to achieve a significant HRQOL (Figure 1). To explain further, gender, health status, age, location of residency and ethnicity/genetic factors are the reasons behind the use food supplements, multivitamins and minerals as a demonstration of self care that can

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achieve the six domains of the HRQOL — the qualitative and quantitative paradigm of this study.

The PICO (population, intervention, compariaon and outcome) guide helped in the formulation of a focused question stating: Do multivitamins, minerals and food supplements achieve a significant HRQOL? The focused question, as a chain reaction, leads to the formulation of a hypothesis stating that the six domains of the HRQOL significantly demonstrate self care (Orem 1991) by using food supplements, multivitamins and minerals. Another formulated hypothesis is the evaluation and analysis of the significant relationship of the five extrinsic factors affecting the HRQOL.

These hypotheses contributed to the method of selecting research studies on HRQOLs.

SEARCH STRATEGY

The PICO guide also was used to focus the search with key words as texts entered on databases. The databases were *CINAHL* (Commulative Index for Allied Health Literatures) (1000 studies), Proquest (5000 studies) and *ResearchGate* (10 500 studies).

The PICO guide are enumerated as: adults and children using food supplements (population) as text words entered on Proquest*;* usage of health products and food supplements (intervention and comparison) as in-texts entered on *CINAHL*; and health related quality of life using food supplements, vitamins and minerals (outcome) as text words entered on *ResearchGate*.

Of the one hundred studies found on databases only ten were selected that spanned from years 2000 to 2013 using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guideline by Moher *et al.* (2009) found on Figure 2.

METHODS

The methods of controlling biases include the inclusion and exclusion criteria. Independent reviewers must note

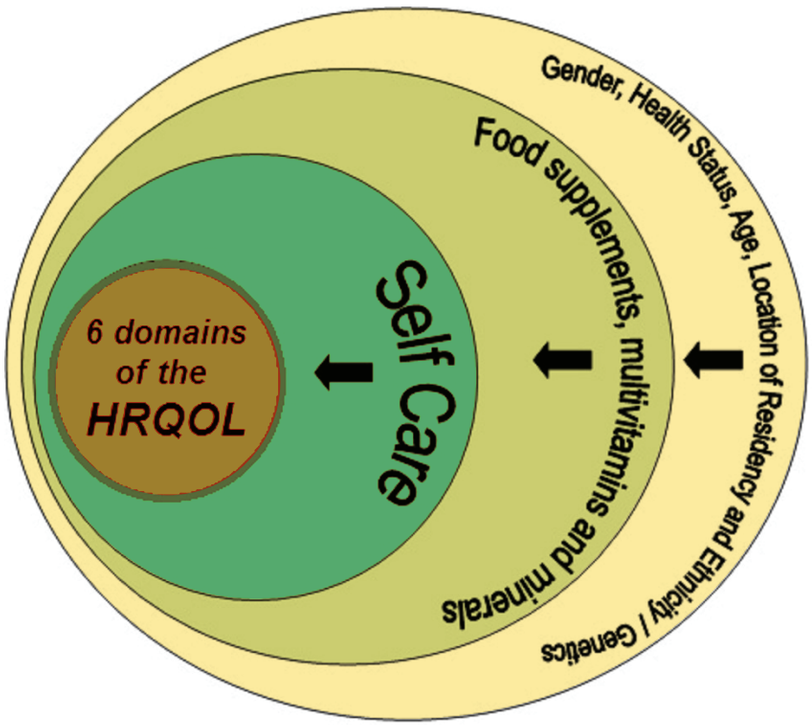

Figure 1. The paradigm used in this meta-analysis in a Venn diagram.

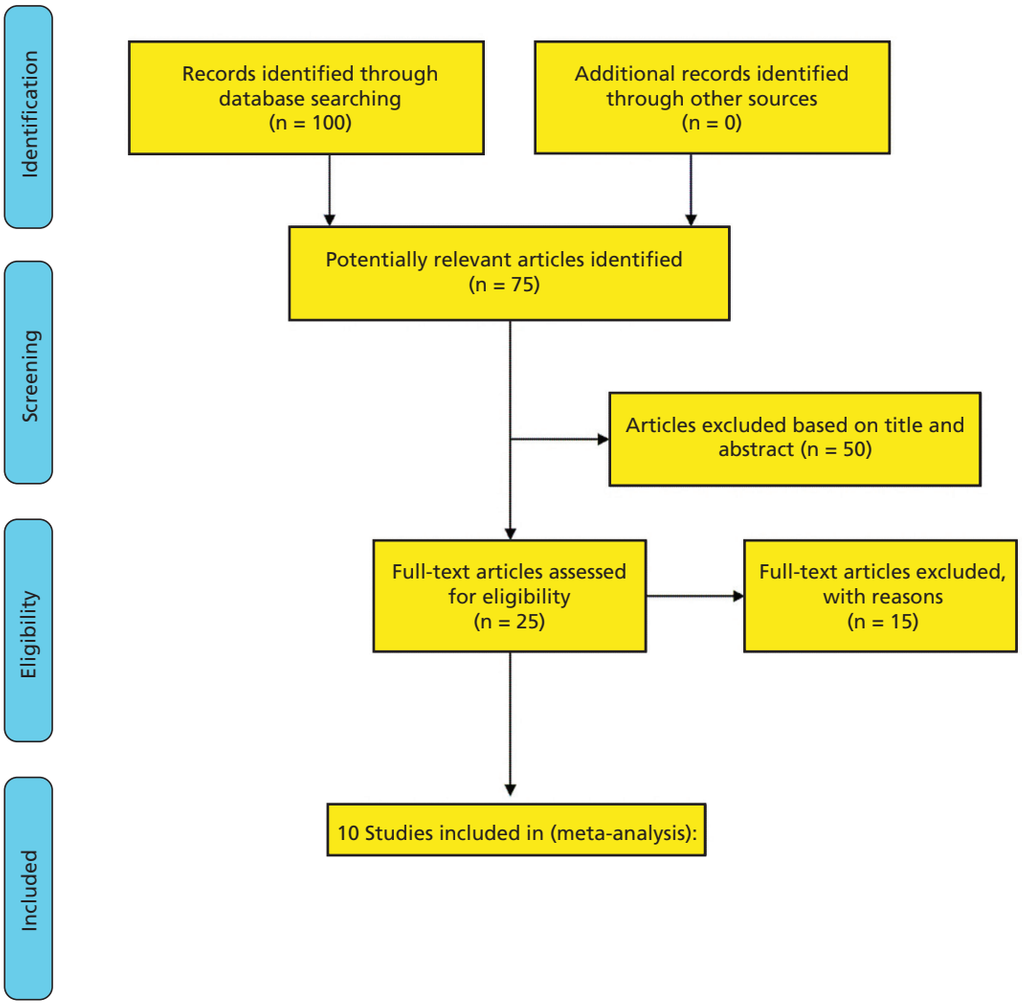

Figure 2. Search protocol.

that the manner of preparation, the manner of consuming or the route of administration and the volume of the multivitamins, minerals and food supplements are not analysed and evaluated. Only the focused question and focused population are measured if it achieves a significant HRQOL. Focused populations were categorised as pregnant women, normal toddlers, children with attention deficit hyperactive disorders (ADHD), children with autism, ageing population, adults concerned with cholesterol problems and communicable diseases, other adults with general health concerns and those with digestive concerns.

A CASP (Critical Appraisal Skills Programme) tool is used to evaluate and analyse the ten quantitative and qualitative studies selected. A CASP tool is designed to help reviewers make sense of evidences. This is achieved through a series of 11 questions that assesses the validity, results and applicability of studies to the aim of this meta-analysis.

A reconstructed HRQOL tool (Table 1) was also used in this meta-analysis which contains domains and indicators to define HRQOL's, validated by biophysiologic instruments (Gil & Feinstein 1994). To explain further, the tool quantitatively evaluated the probability values of the ten selected studies and qualitatively analysed its relationship to the six domains of the HRQOL. The biophysiologic instruments served as an additional tool to measure the validity of the analysed and evaluated results from the ten selected study trials.

Carr and Higginson (2001) and Cella and Tulsky (1990) agreed that study trials of HRQOLs are reliably measured if biophysiologic instruments are used to validate domains and indicators.

The tool was used to compare and contrast the ten selected studies in order to identify differences in indicators that correspond to the domain differences (Guyatt *et al.* 1993) (Table 1).

Table 1. The reconstructed tool of the HRQOL — Six domains and indicators validated by biophysiologic instruments.

Domains	Indicators defining each domain	Biophysiologic instruments
Domain I Physical	1. Pregnancy, pain threshold, vital signs, sleep, comfort and rest — normal feeling 2. Cellular energy, blood circulation and metabolism — blood investigation 3. Control genetic abnormality — congenital or developing on their adult stage	• Blood investigation: ↑ hemoglobin count, RBC, iron, progenitor cells and normal WBC; negative result on rhesus incompatibility test; no genetic abnormalities • Electroencephalography test: Developed prefrontal brain cortex and memory functions • Chest X-ray: Normal heart size and no lung problems • Colonic transit time: Normal bowel movement
Domain II Psychological perceptions	4. Positive outlook is felt 5. Thinking, learning, memory and concentration is effective 6. Self-esteem is high 7. Negative body image disturbance 8. No negative feelings	• Physical Exam: Decreased dryness and thirst problems • ↑ attention span, concentration and social interactions • Good result on intelligence quotient tests with good memory
Domain III Level of independence	9. Mobility — active life 10. Activities of daily living 11. Dependence on medication or treatments aside from food supplement 12. Capacity to work independently	• Physical Exam: Normal body mass index • Bone scanners: Increase bone and muscle mass • Timed up and go test: Increase in mobility
Domain IV Social relationships	13. Good mood or good affect 14. Motivated and motivating others 15. Sexual activity — fertile 16. Social inclusion — capacity to socialize	• Physical exam: ↑ sexual drive • Modified checklist on physical exam: Well motivated and good communication skills • Self-rated health scale: (+) social skills; (–) stress
Domain V Environment	17. Location of residency, work or refuge is safe and secured 18. Home environment is conducive 19. Financial resources are met from environment 20. Tolerated atmospheric pressure 21. The space is enough to acquire new skills and access to actively acquire resources 22. Good for recreation/ leisure activities 23. Free from environmental hazard — chemicals, micro-organisms and polutions 24. Adopts to all forms of transportation	• Physical exam: ↑ resistance to infection and ↓ incidence of falls • Self rated health scale: Conducive home environment and work area
Domain VI Spirituality/ religion/ personal beliefs	25. Evidence of acceptable spiritual perceptions 26. Forgiveness and Blame is balanced 27. Concerns about religious beliefs 28. Concerns to achieve a dignified death	• Blood extraction: ↑ in the production of progenitor and endothelial cells • Self rated health scale: Stress free mind

The domains and indicators used in this tool came from the European's QOL (EuroQOL Group 1996), the Office of Population, Censuses and Survey's (OPCS') QOL (Bowling 1995), the Nottingham health profile's (NHP's) QOL (Hunt *et al.* 1986) and the 36-item short-form health survey's (SF-36's) QOL (Ware & Sherbourne 1992).

Bowling (1997), however, said that caution must be taken while reconstructing domains and indicators of HRQOLs so that it will complement each other. Table 2 enumerates the domains and indicators of EuroQOL, OPCS, NHP and SF-36.

Ethical Issues

Primiarily, autonomy on selecting health products is an individual decision because it is bought over-the-counter without medical prescriptions. Lastly, the benefit of achieving significant domain/s of a HRQOL outweighs the inevitable harm of getting side effects from commercially prepared food supplements, multivitamins and minerals.

Table 2. The EuroQOL (EuroQOL Group 1996), OPCS (Bowling 1995), NHP (Hunt *et al*. 1986) and SF-36 (Ware & Sherbourne 1992)

General domains and indicators	EuroQOL	OPCS	NHP	SF-36	Reconstruction
Pain, vital signs, genetic abnormality and concentration	+	–	+	–	Indicator
Energy or tiredness, cellular energy, metabolism and blood circulation, comfort and sleep	+	–	–	+	Indicator
Negative feelings, socialization, body image and mobility	–	–	–	–	Indicator
Physical or physiologic	+	+	+	+	Domain
Level of independence and daily activities	+	+	+	+	Domain
Social relationships	+	–	+	+	Domain
Environment safety and leisure	+	+	–	+	Domain
Relationships, self esteem, positive outlook in life, mood, forgiveness, spiritual perception and material needs	–	–	–	+	Indicator
Sex, sexual urge and pregnancy	–	–	–	+	Indicator
Work, home, recreation, atmospheric pressure, environmental hazards and transportation	+	–	–	+	Indicator
Emotional well being and spirituality	+	+	+	+	Domain
Dependence or independence on treatments, dignified death and financial resources.	–	–	+	–	Indicator
Psychological perceptions	+	+	+	+	Domain
Perceptions of future	+	–	–	–	Indicator

RESULTS

Table 3 shows the qualitative results after comparing and contrasting the ten selected studies against the indicators and domains of the reconstructed HRQOL tool in this meta-analysis relevant to the extrinsic factors.

Pregnant women using multiple micronutrients did not manifest a significant HRQOL affected by age, location of residency and genetic/ethnicity. The aging population using supplements showed significant effects on the HRQOL having six domains, followed by the adult population using multivitamins with significant five domains while children are identified with the least number of significant domains affected by the extrinsic factors.

Table 4 enumerates the quantitative results of the ten selected studies' probabilities, the population sample sizes and the populations demonstrating self care that are used to evaluate and analyse a significant HRQOL. Of the ten studies, nine demonstrated self care (Orem 1991) leading to a significant HRQOL with an odds ratio (OR) of 90% and a probability value of <0.05.

The focused populations using multivitamins, minerals and food supplements do achieve significant domains of the HRQOL.

DISCUSSION

Self care starts from maternal conception and the beginning of fetal development until an individual reaches the aging process (WHO 2004).

Most pregnant women demonstrate self care by drinking Iron fortified milk and multiple micronutrients regardless of their age and ethnicity because it contributes majorly to the quality of fetal development (Hilton 2003).

The HRQOL among pregnant women using multiple micronutrients and Iron fortified milks shows blood investigation results with an increase in hemoglobin count of greater than 110 milligram per deciliter during their perinatal period from the first trimester to the third trimester (Shankar 2008). However, hemoglobin count can be affected by the environmental domain such as the location of residency (Hilton 2003) making the evaluation of a HRQOL invalid. Pregnant women who live in mountainous areas can experience Megaloblastic anemia (Tortora & Derickson 2010) a condition related to the atmospheric pressure in the environment that increases hemoglobin count confirmed by blood investigation (Black & Hawks 2008), affecting fetal live births (Hilton 2003; Roy *et al.* 1997).

Table 3. The qualitative results.

Populations	Domains	Extrinsic factors	Indicators
Pregnant women using multiple micronutrients	None	Age, location of residency and genetic/ethnicity	None
Children with ADHD using vitamin C, Iron, Zinc and Omega 3	Level of independence, physical, social and psychological	Ethnicity/genetics, age and health status	ADL, metabolism, mood and genes
Children with autism using stem cells	Physical, psychological and social	Health status and ethnicity/genetics	Self esteem, social inclusion and genes
Normal toddlers using DHA milk formula	Physical and psychological	Health status and genetics/ethnicity	Cellular energy, WBC, RBC and concentration
Adult men and women using virgin coconut oil, *moringa*, probiotic fermented milk, vitamin E, beta carotene, chlorophyll and beta glucan barley	Physical, psychological, level of independence, environmental and social	Health status, location of residency and genetics/ethnicity	Capacity to work, safe place to stay, socialization, metabolism and immune response
Ageing populations using stem cells, minerals high in calcium, vitamin D and multivitamins	Physical, level of independence, social, environmental, psychological and spiritual	Gender, location of residency and health status	Cell energy, mood, mobility, home environment, genes and spirituality

In the absence of environmental factors, Shankar (2008) validated an evidence of newborn infant death that is significant with the usage of multiple micronutrients ($p = 0.07$) affecting the physical domain of the HRQOL among pregnant women ($n = 15\ 804$). On the contrary, Shankar (2008) argued that these newborn infant deaths are also associated with women's age as they start to get pregnant at their menopausal stage thus coincidently requires them to use high amount of multiple micronutrients.

Another coincident requires pregnant women to take multiple micronutrients as a form of food supplement if the fetus is confirmed to have a positive blood rhesus incompatibility coming from maternal ethnicity resulting to a maternal and fetal genetic miscoding which does not assure live childbirths (Black & Hawks 2008; Tortora & Derickson 2010). However, it is also disagreeable that pregnant women with successful live childbirths are as such, because of an undeclared use of multiple micronutrients (Hilton 2003).

On the other hand, not all successful live childbirths will grow up with a qualitative life relative to their level of independence (refer to Table 1, No. 10). For example are children recognised to have a genetic disorder called ADHD. Children identified with ADHD came from a genetic lag during maternal conception (Black & Hawks 2008) (refer to Table 1, No. 3).

According to Black & Hawks (2008), ADHD as a child's developmental deviation can be confirmed using electroencephalography, which reveals changes in brain waves with associated decreased energy and susceptibility to fatigue. The prefrontal brain cortex developmental immaturities are affecting the children's HRQOL (Saris *et al.* 2011; Black & Hawks 2008; Tortora & Derickson 2010).

The HRQOL is significant among ADHDs ($n = 233$) who demonstrates self-care using commercially prepared vitamin C, Iron, Zinc and Omega 3 ($p = 0.008$). The ADHDs HRQOL is evaluated with a decrease in the children's skin dryness and decrease episodes of thirst problems (Saris *et al.* 2011) (refer to Table 1, No. 2). These improved physical domain lead mothers to lessen the frequency of the use of therapeutic drugs called Selective Serotonin Reuptake Inhibitors for ADHDs as validated by Sinn & Bryan (2007). In addition, ADHDs social domain associated for both male and female children with cognitive mood disturbances also improve (Sarris *et al.* 2011; Sinn & Bryan 2007) (refer to Table 1, No. 13).

Another genetic disturbance from fetal development is called autism that is found on every one out of one hundred and sixty-six children all over the world (Black & Hawks 2008; Ichim *et al.* 2007). Autistic children with genetic altered neuro-developmental conditions and neural hypoperfusion who are diagnosed using a modified checklist for autism in toddlers (Robins & Dumont-Mathieu 2006) demonstrates self care using anti ageing food supplements with stem cell enhancers (Boris *et al.* 2007) to improve their physical and psychological domain. Ichim *et al.* (2007) validated that the autistic children's ($n = 100$) social interaction, communication, awareness of self and an increase in the attention span is evident ($p = 0.001$) (refer to Table 1, No. 6 and 16). Their genetic

Table 4. The quantitative results.

Studies	Populations demonstrating self care	Probability (p =)	Sample size (n =)	Probability interpretation
Shankar 2008	Pregnant women using multiple micronutrients	0.70	15 804	HRQOL is not significant on fetal and maternal health
Minns *et al.* 2010	Toddlers using DHA milk formula	0.007	20	HRQOL is significant on the ADL, concentration and blood circulation
Sarris *et al.* 2011	ADHD using vitamin C, Iron, Zinc and Omega 3	0.008	233	HRQOL is significant on the children's brain cognition and physical activities
Steptoe *et al.* 2004	Self rated health on adult men and women age 18–70 years using beta carotene, vitamin C and E.	0.001	245	HRQOL is significant on their capacity to work and positive outlook in life
Mahajan & Mehta 2010	Moringa oleifera on all adults with decrease in immune response	<0.001	100	HRQOL is significant to increase their immune response, tissue regeneration
Shilling *et al.* 2013	Virgin Coconut oil on all adults with decrease in immune response	<0.001	34	and to their micro-organism infected environment
Keogh *et al.* 2003	Adults aged 18–65 years using chlorophyll and beta glucan barley	0.001	18	HRQOL is significant with manifested healthy liver and healthy thyroid based on blood and urine samples
Gage & Fernandes 2009	Healthy adult men and women using probiotic fermented milk.	0.001	396	HRQOL is significant on their daily defecation and decrease bloatedness after eating.
Grieger *et al.* 2009	Ageing women using minerals high in calcium, vitamin D & multivitamins	0.01	49	HRQOL is significant on their muscle strength and energy
Ichim *et al.* 2007	Autism Food supplements with stem cell enhancers	<0.001	100	HRQOL is significant in controlling ageing
	Ageing		500	

9 out of 10
OR= 90% and p = <0.05

abnormalities are regenerated and rejuvenated (Ichim *et al.* 2007) (refer to Table 1, No. 3).

On the other hand, normal toddlers ages 18–36 months (n = 20) demonstrates self care using milk and dairy products fortified with docosahexaenoic acid (DHA) to improve their HRQOL (p = 0.007). The physical domain of normal toddlers who use DHA fortified milk products showed an increase in plasma red blood cell count; a normal white blood cell after blood investigation and a normal chest x-ray result (Table 1, no. 2) while their psychological domain manifest good memory and concentration and focus confirmed by intelligence quotient (IQ) tests (Table 1, n o. 5) (Minns *et al.* 2010). The WHO (2003/2002) validated that the physical domain of the HRQOL among normal toddlers can be achieved using DHA food supplements regardless of their previously experienced physical illnesses such as cancer, heart diseases and respiratory illnesses. However, as children grow older, their recommended vitamins, minerals and food supplements to improve their HRQOL also change.

The HRQOL is highly significant among the adult men and women age 18–70 years (n = 245) who demonstrates self care using commercially prepared beta-carotene and vitamin C tablets and vitamin E capsules as an additional protection from stress (p = 0.001) (Steptoe *et al.* 2004). The adult's HRQOL improves and is measured by their

capacity to work, positive outlook and confidence (WHO, 2002; Limon-Pacheco & Gonsebatt 2009) (Table 1, no. 12 and 4). The outcomes of their HRQOL are measured using general self-rated health that evaluates their level of independence and psychological domains (Steptoe et al, 2004). However, positive outlook in life and capacity to work are affected by the adult's health status (Department of Health 2003). Adults who get sick often affect their HRQOL (Fahey 2005).

The HRQOL, in its physical domain is significant among adults with decrease in immune response, demonstrates self care (Orem 1991) through use of *Moringa oleifera* ($p = <0.001$) (Mahajan & Mehta 2010) and virgin coconut oil ($p = <0.001$) (Shilling *et al.* 2013).

Virgin coconut oil is found to have a significant increase in white blood cells and hemoglobin count and good hepato-protective activities against infection confirmed through blood investigations on adults ($n = 34$) with decrease in immune response (Shilling *et al.* 2013) (Table 1, no. 2). WHO (2003) and the Food and Drug Administration (FDA) (2012) validated that coconut extracts are also used on anti-ageing food supplements to regenerate dead and micro-organism infected cells and tissues.

While Farooq Anwar *et al.* (2007) and Jonathan *et al.* (2012) validated that Moringa seeds, commercially prepared as food supplements help in anti-oxidation of dead or infected cells, anti-inflammatory, antipyretic and increase cellular regeneration assessed thru physical examination. Adults with decreased immune response takes Moringa oleifera to enjoy their surrounding ($n = 100$) (Mahajan & Mehta 2010). Kasolo *et al.* (2010) says that these adults in rural communities with decrease in immune response worry less on their micro-organism invaded environments (Table 1, no. 23) and enhance their capacity to work (Table 1, no. 12).

However, having a hazard-free environment and the capacity to work can still affect the HRQOL with hormonal changes (Behall *et al.* 2004; McIntosh *et al.* 1991). Adult men and women have different hormonal changes that affect bowel peristalsis (Gage & Fernandes 2009), health maintenance, iron production (Shankar 2008) and fat absorption thus affecting their capacity to work (McIntosh *et al.* 1991). Hormonal changes also vary with ethnicity leading to obesity confirmed through physical examination and blood investigation (Black & Hawks 2008; Tortora & Derrickson 2010).

The HRQOL is significant ($p=0.001$) among adult men and women with obesity ($n=18$) caused by hormonal changes as they demonstrate self-care using fiber food supplements with chromium and beta glucans (Keogh *et al.* 2003). The obese adults' HRQOL is evident in a blood investigation result with decreasing cholesterol counts and maintaining a normal body mass index after taking fiber diets (Deng 2009) (Table 1, no. 2). Fiber diets combined with high amount of chromiums and beta glucans have been validated by Behall *et al.* (2004) and Sadri *et al.* (2012) to improve the level of independence and the physical domain of adult men and women with obesity. The presence of chlorophyll from chromium rich food supplements also helps in the detoxification and increases their immune response (Sadri *et al.* 2012) in addition to their decreasing cholesterole (Deng 2009; Behall *et al.* 2004) (Table 1, no. 2).

However, normal adults must still demonstrate self-care by diet and food control (Gage & Fernandes 2009). Normal adults are influenced to change diets and foods based on the location where they stay (Smith-Warner *et al.* 2000). Smith-Warner *et al.* (2000) added examples of frequently changing diets, such as regular or occasional alcohol consumption and eating raw and uncooked foods. These changing diets lead to bloatedness after overeating, irregular daily bowel movement as confirmed by colonic transit time (Gage & Fernandes 2009) and infertility confirmed by blood laboratory results (Bertazzoni *et al.* 1993; Smith-Warner *et al.* 2000). In order to improve their bowel movement, these healthy adult men and women ($n = 396$) demonstrates self-care (Orem 1991) by using commercially prepared probiotic fermented milk-containing Bifidobacterium Lactis (Gage & Fernandes 2009), regardless of the manner of consuming or route of the administration, to improve their HRQOL's physical domain ($p=0.001$).

Fiber diets with chlorophylls and probiotic fermented milk-containing *Bifidobacterium Lactis* regulates uncontrolled eating habits and normalises daily bowel movements of not more than twice a day (Table 1, no. 2) as validated by WHO (2010) and Bertazzoni *et al.* (1993). These activities are also known as a hypothalamic regulation that also affects their reproductive hormones, increasing their sexual drive (Bertazzoni *et al.* 1993; Tortora & Derickson 2010) (Table 1, no. 12).

A balanced metabolism, a good systemic immune response and a healthy reproductive system can result to a good ageing process associated with hormonal changes (Bertazzoni *et al.* 1993; Smith-Warner *et al.* 2000; Black & Hawks 2008). However, it is inevitable for the ageing population to have degenerated cells (Tortora & Derickson 2010).

The ageing adults ($n = 500$) who demonstrate self care use food supplements with precursor cells or stem cells enhancers to develop, repair, restore and regenerate their blood, lymph, brain, bones and other organs (Ichim *et al.* 2009) (Table 1, no. 3).

This is validated by Ichim *et al.* (2007), which stated that food supplements with stem cells is significant in

achieving HRQOL (p = <0.001) since it can regenerate mesenchymal stem cells found in bone marrow, blood, dermis and periosteum and make old tissues young again confirmed thru blood investigation. However, the HRQOL for all ageing populations differ with regards to gender. Ageing women's HRQOL also require strong bones in addition to having smooth skin (Agero & Verallo-Rowell 2004) and regular tissue regeneration (Grieger *et al.* 2009; Mikirova *et al.* 2009). Menopausal ageing women are prone to have weak bones seen on bone scans (Tortora & Derickson 2010).

A factor affecting the HRQOL among menopausal women is their location of residency leading to falls and health status that weakens their bone mass and muscle strength (Grieger *et al.* 2009; Mikirova *et al.* 2009; Black & Hawks 2008). The HRQOL is significant (p = 0.01) among ageing women (n = 49) who demonstrates self care by using calcium carbonate and vitamin D, regardless of the manner of consuming or the route of administration, to decrease their incidence of falls (Grieger *et al.* 2009) from their area of residency (Table 1, no. 9 and 18). Grieger *et al.* (2009) studied that these ageing menopausal women who use multivitamins with high amount of calcium carbonate and vitamin D also increases their muscle strength and energy (Table 1, no. 2).

Broe *et al.* (2007) and WHO (2002) validated an increased energy for the ageing women taking calcium carbonate and vitamin D confirmed thru the handgrip strength timed up and go test that evaluates their bone and muscle strength (Grieger *et al.* 2009). However, aging men also need muscle strengths to make their life more active.

Both ageing men and women (n = 500) using food supplements with stem cells and progenitor cells can significantly increase their bone and muscle strength (Ichim *et al.* 2007; Mikirova *et al.* 2009; FDA 2012) (p = <0.001).

Mikirova *et al.* (2009) studied that stem cells on food supplements are anti ageing for a more active lifestyle. In addition, stem cell enhancers can also improve aging men's penile erection problems called impotence since penis involves muscle strength and contraction (Mikirova *et al.* 2009; FDA 2012).

Zhao *et al.* (2009) validated that signs of stem cell activities are present with blood laboratory evidence that confirms a change in the ageing hematopoietic and endothelial progenitors thus delays the ageing process for more active years – socially and physically (Table 1, no. 2 and 9).

Regarding the HRQOL in the domain of spirituality, it is phenomenological that anti ageing food supplements improve spiritual perceptions (Mackey 2003; Mikirova *et al.* 2009) (Table 1, no. 25). People consuming this food supplement becomes more forgiving and spiritually inspired as validated by Spindler *et al.* (2008) using ethnographic case studies presenting the religious anti-ageing narratives of German-speaking anti-ageing movement. Anti-ageing food supplements regulate the emotions and control mood depressions thus making the ageing populations balance their perceptions on forgiveness and blame (Spindler *et al.* 2008; Mikirova *et al.* 2009; Mackey 2003) (Table 1, no. 13, 26 and 27).

RECOMMENDATION

According to FDA (2012), healthcare professionals must recommend commercially prepared multivitamins, minerals and food supplements when bought over-the-counter, with the seal of approval from government-owned drug auditing companies.

Ethically, healthcare professionals should emphasise during health promotions that displays of health claims are unlikely to be allowed on the health products' labels (National Health and Medical Research Council 2006; FDA 2012; Scientific Committee on Food 2001).

Recommending natural health products is still the best option. Obiajunwa *et al.* (2002) said that plant names and plant parts as food supplements with vitamins and minerals (Table 5) are one of the classic ways of health promotion, and are more proven to achieve almost all of the six domains of the HRQOL.

But nowadays, plant parts are commercially prepared.

The contemporary way of recommending commercially prepared health products requires more caution that is based on specific needs of organ systems related to the five extrinsic factors (Black & Hawkes 2008; Tortora & Derrickson 2010).

The young adolescent populations need to consider their age, gender and health status when consuming multivitamins, minerals and food supplements since changes on their physical and mental health are still developing. Health promotions are important to select the most significant over-the-counter multivitamins, minerals and food supplements that have the ability to achieve the physiologic, psychologic and social domains of a HRQOL (Mikirova *et al.* 2009; Keogh *et al.* 2003; Smith-Warner *et al.* 2000).

As these young adolescents become adults, gender hormones and ethnicity affect their manner of selecting multivitamins, minerals and food supplements, thus making it more complex for healthcare professionals to promote self care (Orem 1991), to achieve a significant HRQOL.

Table 5. Plant names and plant parts used in the classic way of doing health promotions (Obiajunwa *et al*. 2002)

Plant name	Common name	Purpose / Use	Plant part
Acalypha wilkensiana	Copper leaf	Fungal skin	Leaf
Alchornea cordifolia	Christmas bush	Anti diarrhea	Leaf
Azadirachta indica	Nim tree	Liver function	Leaf
Calotropis procera	Sodom apple	Steroid	Leaf
Cassia alata	Tropical shrub	Anti eczema	Leaf
Chromoluena odorata	Sunflower plant	Allergic reaction	Leaf
Citrus aurantifolia	Lime tree	Skin dryness	Leaf
Datura metel	Devil's trumpet	Hair shampoo	Leaf and fruit
Eugenia uniflora	Brazilian cherry tree	Antioxidant	Leaf
Euphorbia hira	Pantropical weed	Anti protozoa / dengue	Aerial parts
Cyclosorus afer	Tropical fern	Reproductive health	Leaf
Ficus exasperate	Fig tree	Anti arthritic	Leaf
Laportea aestaan	Nettle tree	Bone diseases	Aerial parts
Mangiferia indica	Mango tree	Antiemetic	Leaf
Mamordica charantia	Bitter melon plant	Stomach ache	Aerial parts
Ocimum gratissimum	Wild basil	Anti tumor / cancer	Leaf
Phyllanthus niruri	Berry under	Jaundice	Leaf
Spondias monbin	Yellow plum plant	Birth control	Leaf
Zingiber officinale	Ginger plant	Cardiovascular diseases	Rhizome

As adults age specific needs also change because they need to consider their degenerating organ systems. Healthcare professionals must choose food supplements, multivitamins and minerals that has the ability to maintain homeostasis on the aging's organ system in order to achieve all six domains of HRQOL especially if they are dying.

Lastly, children with genetic abnormalities and physical disabilities must consider adult assistance to help them purchase or buy commercially prepared multivitamins, minerals and food supplements because they cannot generate their own funds.

Generally, adults buying health products for children should seek for medical advices, especially if extrinsic factors can affect a specific domain of their HRQOL.

Consultations from specialists are highly recommended to be primarily sought, since it is difficult to assess specific needs, to achieve the six domains of the HRQOL using commercially prepared food supplements, multivitamins and minerals.

CONCLUSION

In order to balance the six domains of the HRQOL, self care must be based on the specific needs of individuals. That is why promoting commercially prepared health products must be based on an individual's specific needs.

The HRQOL is therefore evaluated and analysed as a theoretical outcome of self care.

It is therefore concluded that there is a significant relationship between age, location of residency, gender, health status and ethnicity/genetic that affects the six domains of the HRQOL.

It is also concluded that commercially prepared food supplements, vitamins and minerals significantly demonstrated self care to achieve an individual's HRQOL (OR = 90% / p = <0.05).

Date of submission: January 2014
Date of acceptance: April 2014

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