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HEALTH EFFECTS OF MEAT

A research submitted to the Council of the Veterinary Department as part of obtaining a veterinary technical diploma

PREPEARED BY

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. قُل لَّا أَجِدُ فِي مَا أُوحِيَ إِلَيَّ مُحَرَّمًا عَلَ
ىٰ طَاعِمٍ يَطْعَمُهُ إِلَّا أَن يَكُونَ مَيْتَةً أَوْ دَمًا
مَّسْفُوحًا أَوْ لَحْمَ خِنزِيرٍ فَإِنَّهُ رِجْسٌ أَوْ فِسْقًا
أُهِلَّ لِغَيْرِ اللَّهِ بِهِ ۚ فَمَنِ اضْطُرَّ غَيْرَ بَاغٍ
وَلَا عَادٍ فَإِنَّ رَبَّكَ غَفُوررَّحِيمٌ .

((الانعام 145))

Dedication

To the light that reveals the darkness of ignorance, the teacher of humanity....Muhammad (may God bless him and grant him peace) To the one who implanted in me the pulse of life and made my life a goal to which I strive...my father

To the world of tenderness, love, mercy, and a symbol of sacrifice....my dear mother

To those who have been the best help for me, my dearest brothers and sisters

To everyone who wanted me to succeed and good.....

we dedicate this fruit of my effort...

we dedicate to all of you the harvest of your planting and our humble effort

Research students

Acknowledgment

Praise be to God, who enlightened the hearts of His pious servants with the light of His clear Book, and made it a guidance and a mercy for the believers, and prayers and peace be upon the most honorable of messengers, our master Muhammad, the trustworthy Arab Prophet, lasting prayers and peace until the Day of Resurrection and Resurrection, and upon his immaculate family, his righteous companions, and those who followed them with kindness until the Day of Judgment. To proceed: I have the honor to extend my thanks, appreciation and gratitude to all my distinguished professors in the veterinary department, and our special thanks to our supervisor, Dr. Hassan Abdullah Muhammad, who provided us with the sources and supported us to complete the research.

We do not forget our families and their support and bear the trouble of studying with us........

Supervisor approval

I certify that this research decreed (HEALTH EFFECTS OF MEAT) Submitted by students: (Ramazan Haji Pshtwan Rowaz Nima Muhammad Mulla Shad Burhan Suleiman Ali)

It took place under my supervision at Shaqlawa Technical College as part of the requirements for obtaining a diploma in veterinary medicine.

Signature

Name: Asist. Proff.Dr. Hassan Abdullah Mohammed

Date:

Based on the available recommendations, I recommend the research for discussion .

Signature :

Head of Department :

Date:

Summary

Red meat has been an important part of the diet throughout human evolution. Overall, when included as part of a healthy and varied diet, red meat can provide a rich source of bioavailable essential nutrients and high biological value protein. The present paper discusses the dietary role/impact of red and processed meat, with some reference to the relative effect of white meat, in a range of chronic conditions including iron-deficiency anemia, cardiovascular diseases (CVD), cancer and dementia. The role of red meat in relation to key physiological conditions such as maintaining skeletal muscle and bone health and during pregnancy is also discussed. The inclusion of lean red meat in a healthy, varied diet may be beneficial during these critical conditions. There is however increasing evidence that red meat and especially processed meat are associated with increased risks of CVD, cancer and dementia whereas white meat is neutral or associated with a lower risk. There now seems little doubt that processed and unprocessed meat should have separate public dietary guidance. Also Red meat has been an important part of the human diet throughout human evolution. When included as part of a healthy, varied diet, red meat provides a rich source of high biological value protein and essential nutrients, some of which are more bioavailable than in alternative food sources. Particular nutrients in red meat have been identified as being in short supply in the diets of some groups of the population. The present paper discusses the role of red meat in the diets of young infants, adolescents, women of childbearing age and older adults and highlights key nutrients red meat can provide for these groups. The role of red meat in relation to satiety and weight control is discussed as the inclusion of lean red meat in a healthy, varied diet may help weight loss as part of an energy-reduced diet. A summary of the UK advice on the amount of red meat that can be consumed as part of a healthy, varied diet is also provided.

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1. Introduction

Global meat production has increased rapidly over the past 50 years, with the rate of change across countries being highly variable [1]. Meat consumption growth has been most marked in countries that experienced a strong economic transition, for example, China and Brazil have grown approximately 15-fold and 4-fold, respectively, since 1961 (Figure 1). While worldwide in the 1960s, dietary protein primarily came from plant-derived products such as wheat, nowadays, up to 58% of the protein availability comes from animalderived products. Consequently, at present, meat products constitute the major source of proteins in developed countries (28 g of protein/person/day), accounting for 30% of total energy consumption [2].

Among the different meat types available in the markets, poultry and pig meats have shown the highest increase in consumption [3, 4] (Figure 1). Beef and buffalo meat consumption has remained stable in recent years, even decreasing slightly [4]. According to Salter et al. [5], in the period 2014–2016 total meat consumption per capita worldwide was 34.1 kg/year, being almost 60% red meats (pork, sheep and beef). Nowadays, approximately 5% of the global population considers themselves vegetarian, whereas there are many more people (between 14 and 60%) that define themselves as flexitarian, which means that they reduce meat consumption, but it is not eliminated from the diet [6]. Diet is a key risk-modifying factor for chronic diseases, and it must be used appropriately throughout the key life stages such as during pregnancy, the menopausal period and in the elderly. In general, reducing risk in early life might be beneficial in later life. Consumption of meat and meat products provides a supply of important nutrients including proteins, iron and vitamins, among others—to the human body. As an essential part of a mixed diet, meat ensures adequate delivery of essential micronutrients and amino acids which are involved in the regulatory processes of energy metabolism for human health and development. However, despite being a key and unique combined source of high-quality proteins, iron and zinc, red and particularly processed meat has been associated with an Meat is defined as the flesh of an animal consumed as food. Red meat is considered all types of mammalian muscle (beef, veal, pork and lamb) which can be fresh, minced and frozen. Processed meat is defined as meat preserved by methods other than freezing, such as salting smoking, heating and marinating or by the addition of chemical preservatives (e.g., ham, bacon, hamburgers, salami, etc.) [7]. during the processing of meat, additional meat and animal fat may be added together with a wide range of non-meat substances and additives leading to more complex products. While the differences between meat types (red, white, different cuts, processed meats, etc.) may not be clear to many consumers, differential benefits and risks of chronic disease development and during key life processes between them are substantial.

This paper aims to summarize the benefits and challenges primarily associated with red and processed meat consumption including the risk of iron deficiency and chronic non-communicable diseases although some comparisons with white meat are included. In addition, the role of meat in the diet during pregnancy is examined as this period has major implications for the health of both mother and the unborn.

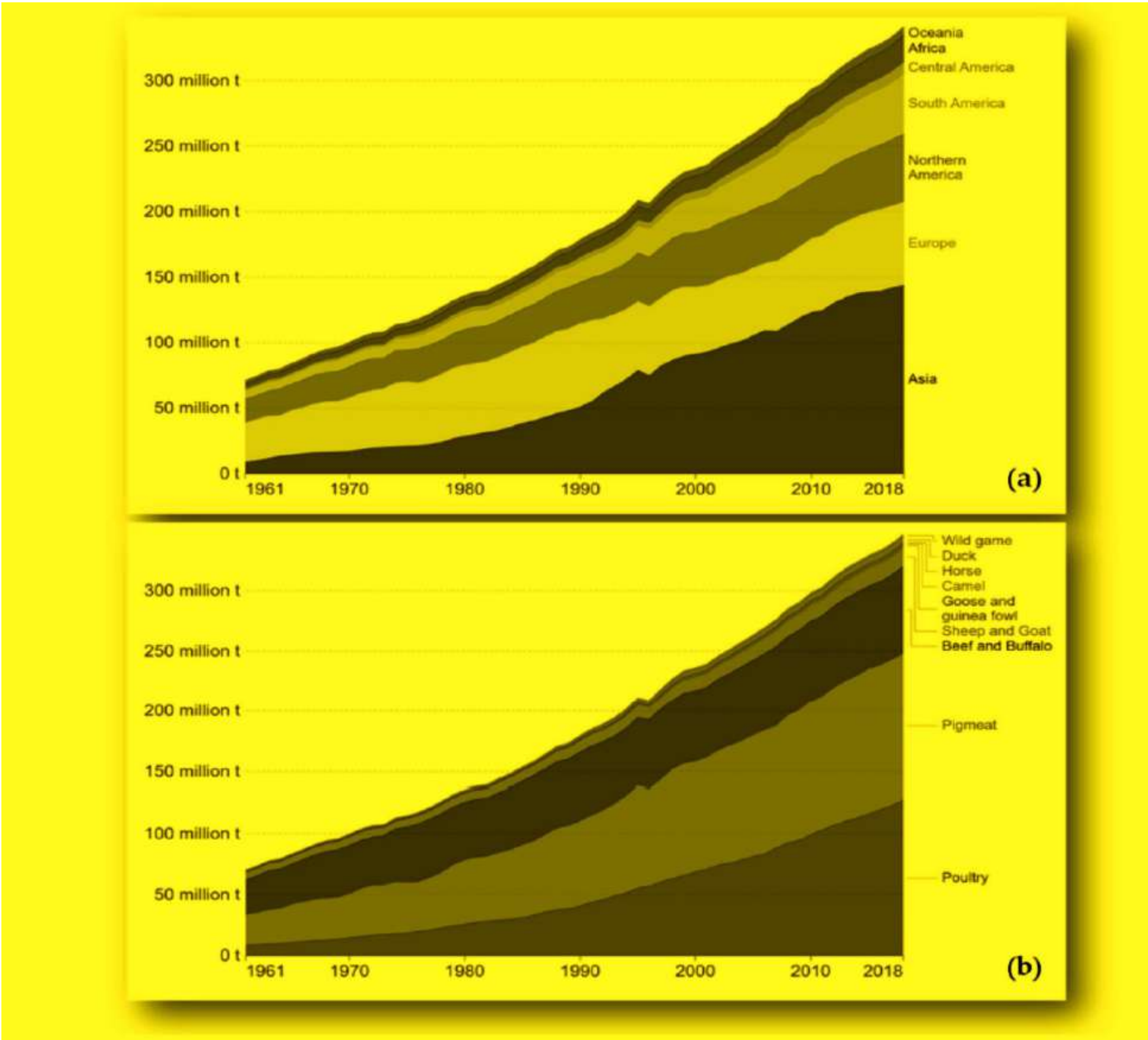

Figure 1. Global meat production (**a**) and meat production by livestock type (**b**). Source:https://ourworldindata.org/meat-production (accessed on 1 February 2022) [1].

2. Non-Communicable Diseases

2.1. Iron-Deficiency Anaemia

The World Health Organisation (WHO) [8] defines anaemia as the condition of having a low number of red blood cells (<4.7 and <4.2 million cells/_L for men and non-pregnant women, respectively) or a low blood concentration of hemoglobin (<13.0 and 12.0 g/dL for men and non-pregnant women, respectively). Iron-deficiency anaemia (IDA) is usually regarded as the most common cause of anaemia although differential diagnosis is important as there are other causes and there may be concurrent nutrient deficiencies and other health comorbidities. IDA particularly affects adolescent girls, women of childbearing age, pregnant women and children.

Iron is an essential nutrient being a component of hemoglobin in red blood cells and of myoglobin which transports oxygen around the body and stores it in muscles and other tissues, respectively. Iron is also involved with a number of enzymes that are involved in energy metabolism, the metabolism of nucleotides, and the synthesis of proteins and other metabolites [9]. Infants are generally associated with a higher risk of IDA due to their rapid growth and often limited dietary sources of iron. Iron is involved in many central nervous system processes that can affect infant behaviour and mental functioning which can persist into adulthood, potentially leading to lower productivity in adults [10].

There is increasing evidence of a relationship between iron and vitamin D such that low vitamin D status can contribute to a reduction in iron status and consequently increase the risk of anaemia [11]. The exact mechanism(s) for this interaction is not fully known but indications include vitamin D affecting erythropoiesis due to its effect on the iron regulatory hormone hepcidin [12] and having a direct effect on erythroid precursors in the bone marrow [13]. Overall, it seems clear that vitamin D status should always be examined when investigating IDA. Although bone marrow has been regarded as the best tissue for estimating iron storage in the body, it is invasive and costly to extract, and serum ferritin concentration is now generally accepted to provide a satisfactory measure of iron status.

WHO [14] reports that some 30% of the world's population suffers from anaemia,

Predominantly IDA, with the highest prevalence in preschool-age children (47.4%) and pregnant women (41.8%). A high prevalence exists in many low- and middle-income countries, with India recording 60% and 54% in children and women (aged 15–49 years), respectively [15], and is a major concern. Poor iron status is however also seen in developed countries. In the United Kingdom, Year 8 of the rolling National Diet and Nutrition Survey [16] showed that about 25% of females in the age range 11–18 years had serum ferritin concentrations less than 15 _g/L with 12% of older females (19–64 years) also being of the sub-optimal status. Within that age range, pre-menopausal women will generally be of lower status than those that are postmenopausal. These indications of poor iron status in the UK reflect dietary iron intakes in the same study [16] with 54% of females 11–18 years and 27% of females 19–64 years having dietary iron intakes below the lower reference nutrient intake (4.1 mg/d; regarded as adequate for only the bottom 2.5% of the population).

Although the majority of worldwide anaemia is IDA, there is good evidence that other factors can contribute including intestinal parasite infestation as reported in India and in North American Inuits [17] where anaemia is a serious problem despite having a high meat intake.

Dietary iron can be in the form of haem or non-haem. Haem iron is only found

in animal and seafood products, notably red meat and is highly bioavailable (typically 20–30% absorption) whereas non-haem iron is found in plant and animal-based foods and is much less bioavailable (typically 1–10% absorption). In addition, haem iron can increase the absorption of non-haem iron when they are consumed together in a meal [18] and this increase occurs even with diets rich in phytates that can inhibit iron uptake. Kristensen et al. [19] showed that including 60 g of Danish pork meat (classified as red) in high phytic acid diets (1250 _mol/d) increased the fractional absorption of non-haem iron compared with the same diets without the meat. The exact mechanism by which haem iron increases the absorption of non-haem iron is not entirely clear but appears to involve peptides and amino acids released from hydrolysis of the meat protein [20]. Anderson and Frazer [21] proposed that haem iron may bind to the enterocyte brush border and is then endocytosed into the enterocyte. Iron is then enzymatically released from haem and exported from the cells via ferroportin 1. Although the uptake of non-haem iron by the enterocyte is by a different process to haem iron, its export into the circulation is also via ferroportin 1 [21]. All this evidence highlights that those who consume red meat will get more highly available haem iron and some non-haem iron whereas vegetarians and vegans generally only get non-haem iron and thus have a higher risk of IDA. There is considerable variation in the iron concentration within and between meat types including fish (Table 1).

Red meats and notably venison are generally the richest dietary source of iron with white meat and especially fish being considerably lower.

Table 1. Typical iron concentrations in a range of meat types (from [22]).

Meat Type	Iron Concentration (mg/100 g)
Red meat	
Pork steaks, grilled, lean	1.1
Lamb leg steaks, grilled, lean	2.2
Beef rump steak, grilled, lean	3.6
Venison, roasted	5.1
White meat	
Turkey, light meat, roasted	0.50
Turkey, dark meat, roasted	1.2
Chicken, light meat, roasted	0.40
Chicken, dark meat, roasted	0.80
Fish	
Cod, flesh only, grilled	0.10
Haddock, flesh only, grilled	0.17
Salmon, flesh only, grilled	0.45

of iron intake is in the form of haem [23]. There are large populations in India which are committed vegetarians. These groups have survived for possibly 2000 years following a "religious" prohibition of meat, probably developing adequate dietary strategies. The Indian National Family Health Survey 2015–2016 [15] reports that very few women consume meat daily although about 30% do consume it weekly. The considerably sub-optimal iron intakes in UK females noted above are primarily a reflection of a reduction in the consumption of red meat which has occurred over the last 40 years. Figure 2 shows the substantial reduction in consumption of red meat (beef, sheep meat and pork) and the rise in white meat (poultry) that has occurred in the UK from 1974 to 2018. Heath and Fairweather-Tait [24] reported that iron intake of UK adults fell from about 13.5 mg/person/day in 1970 to about 10 mg/person/day in 1998 which is similar to Years 7–8 of the rolling UK National Diet and Nutrition Survey [16] which reported mean intakes of 11.6 and 9.3 mg/d for men and women, respectively. Moreover, Roberts et al. [16] reported that for adults, meat now only supplies 21% of daily iron intake with the greatest source

(38%) being cereals and cereal products emphasising the shift from haem iron to non-haem iron.

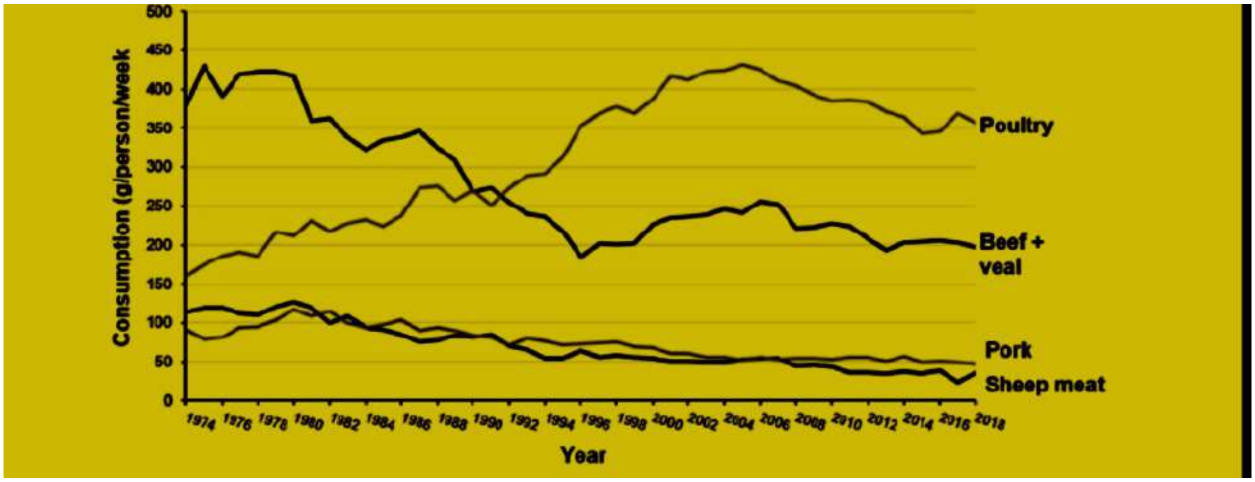

Figure 2. Changes in meat types consumed in the UK 1974–2018 (from DEFRA [25])

It is clear that red meat can be an important source of dietary iron but traditional dietary habits or reductions in habitual red meat consumption have led to sub-optimal iron intake with the attendant increase in the risk of IDA. The increased reliance on plant-based sources of dietary iron indicates the need for more attention to the concentration and bioavailability of this iron. It also suggests that maybe the use of red meat as an iron source should be targeted at children and young women.

2.2. Meat Consumption and Non-Communicable Chronic Diseases

Although mortality from cardiovascular diseases (CVD), including ischaemic heart disease (IHD) and stroke, is now declining in most of Europe, they remain the single largest cause of death worldwide, particularly in middle and later life. Moreover, there is considerable variability within Europe, for example in 2018, Bulgaria had 6.2 times the CVD mortality rate of France in 2016 [26]. CVD are also a substantial cause of morbidity and accounts for 82% of disability-adjusted life years [27]. In addition, since 1996, the number of people diagnosed with diabetes (predominantly type 2) in Europe has increased substantially and in 2019 Germany had the highest rate (15.3% of the population) with Ireland having the lowest at 4.4% of the population [25,28]. Other chronic diseases of concern are dementia and cancer. Due to the rapid ageing of many populations, the number of people living with dementia is projected to triple in the next 30 years [29].

Diet is a key risk-modifying factor for many chronic diseases and evidence for the

association of meat consumption with various chronic diseases has been rather inconsistent. Indeed, the study of O'Connor et al. [30] provides evidence that heterogeneity in meat types hinders both the interpretation of meat intake and related chronic disease risk. This short review is focused on the chronic health effects of red meat, white meat and processed meat as defined by WHO [31] with most evidence based on data from long-term prospective studies.

2.2.1. Cardiovascular Diseases

The meta-analysis of Micha et al. [32] reported that consumption of processed meat,

but not red meat, was associated with a higher risk of IHD (Relative risk (RR) per 50 g/day: 1.42, 95% CI: 1.07, 1.89). The study of Bellavia et al. [33] with two Swedish cohorts reported that subjects in the highest quintile of red meat consumption had a 21% increased risk of allcause mortality (hazard ratio (HR): 1.21, 95% CI: 1.13, 1.29) and a 29% increased risk of CVD mortality (HR: 1.29, 95% CI: 1.14, 1.46) compared with those in the lowest quintile. An early meta-analysis was carried out by Abete et al. [34] which involved 13 cohort studies that examined associations between total, processed, red and white meat intake and all-cause, CVD and IHD mortality. This found that those with the highest intake of processed meat had 22 and 18% higher risk of mortality from any cause and CVD, respectively, whilst red meat was associated with a 16% greater risk of CVD mortality. There were no associations for white meat. Looking at effects on hypertension, a major risk factor for CVD, particularly stroke, Schwingshackl et al. [35] undertook a systematic review and dose–response metaanalysis of prospective studies and reported a positive association between red meat intake and hypertension (RR 1.14 per 100 g/day, 95% CI, 1.02, 1.28). The risk from processed meat was about twice that for red meat (RR 1.12 per 50 g/day, 95% CI: 1.00, 1.26) although there were concerns about the quality of evidence from both meta-analyses.

These studies highlight the variability in outcome referred to above but more recently a number of systematic reviews and cohort studies with a large population have tried to provide more clarity. Iqbal et al. [36] reported on the association of unprocessed red and white meat and processed meat with mortality and CVD in the 21-country PURE study involving 134,297 participants with a 9.5-year follow-up. They found that high red meat intake (_250 g/week vs. <50 g/week) was not significantly associated with total mortality or major CVD events and poultry meat intake was also not related to any of the assessed health outcomes. However, a high intake of processed meat (_150 g/week vs. 0 g/week) was associated with a higher risk of total mortality (HR: 1.51, 95% CI: 1.08, 2.10, p-trend 0.009) and major CVD events (HR: 1.46, 95% CI: 1.08, 1.98, p-trend 0.004).

Due to the increasing number of systematic reviews, an additional form of evidence synthesis is the overview of systematic reviews (umbrella review). Jakobsen et al. [37] accordingly summarised three systematic reviews of cohort studies published

2017–2019 which included meta-analyses of associations between unprocessed red meat and CVD and stroke, unprocessed poultry meat and stroke and processed meat and CVD and stroke. A summary of the findings is given in Table 2. These indicate no clear associations between intakes of unprocessed red meat or processed meat and risk of CVD, an association between processed meat intake and higher risk of IHD and stroke, together with an association between poultry meat intake and a lower risk of stroke. However, using the NutriGrade system for grading meta-analysis evidence quality, only the processed meat intake and higher risk of IHD and stroke and unprocessed meat and stroke were graded as moderate quality, with the others being of low or very low quality. The authors concluded that many of the systematic reviews had critical weaknesses and future research should focus on CVD sub-types and substitution analysis between different meat types and between meat types and non-meat protein sources. Despite the weaknesses, a key outcome of the study is further evidence of the increased CVD risk linked with processed meat and possibly the neutrality of white meat.

Table 2. Meta-analyses of associations between meat type and risk of CVD, IHD and stroke (from [37]).

Systematic Review Used	Number of Cohort Studies	Outcome	Comparison Used	Risk Ratio (95% CI [1])
Unprocessed red meat				
Zeraatkar et al. (2019)	3	CVD	Dose–response, per 50 g/day	1.01 (0.99, 1.02)
Kim et al. (2017)	6	Stroke	High vs. low intake	1.11 (1.03, 1.20)
Zeraatkar et al. (2019)	6	Stroke	Dose–response, per 50 g/day	1.01 (1.00, 1.01)
Unprocessed poultry meat				
Kim et al. (2017)	3	Stroke	High vs. low intake	0.87 (0.78, 0.96)
Processed meat				
Zeraatkar et al. (2019)	3	CVD	Dose–response, per 50g/day	1.01 (0.97, 1.05)
Bechthold et al., (2019)	3	IHD	Dose–response, per 50g/day	1.27 (1.09, 1.49)
Kim et al. (2017)	6	Stroke	High vs. low intake	1.17 (1.08, 1.25)
Bechthold et al. (2019)	6	Stroke	Dose–response, per 50g/day	1.17 (1.02, 1.34)
Zeraatkar et al. (2019)	6	Stroke	Dose–response, per 50g/day	1.02 (1.01. 1.04)

[1] CI, Confidence interval.

2.2.2 Meat Consumption during Pregnancy

The diet consumed during pregnancy may have implications for the health of both mother and the unborn infant. The nutritional environment that mothers provide during pregnancy is important for the optimal health, development, and long-term chronic disease risk of the infant [38]. General recommendations invite pregnant women to consume a balanced and varied diet consisting of frequent intakes of vegetables, fruit, whole grains, low-fat dairy, lean meat and fish, and legumes and nuts and limit the consumption of red and processed meat [39]. Anaemia during pregnancy, in particular in the third trimester, can cause adverse perinatal outcomes including preterm labour, premature rupture of membranes, and increased maternal and foetal mortality. Iron intakes among non-pregnant women of childbearing age are frequently below recommended levels with [16] reporting that in the UK 54% and 27% of females aged 11–18 years and 19–64 years, respectively, had iron intakes below the lower reference nutrient intake. This is likely to be the result of a chronic reduction in red meat consumption since as noted earlier, red meat is an excellent source of highly bioavailable haem iron. Maternal diets before and during pregnancy could influence rates of preterm birth and infants born small for their gestational age (SGA). The latter have an increased risk of death and developmental and behavioural problems in childhood. Therefore, the importance of adequate maternal nutrition to reduce the risk of giving birth to SGA infants is of paramount importance in particular in developing countries.

Several reports describe that the dietary patterns characterised by higher intakes of processed meat were associated with a higher risk of having preterm infants. These diets contained pro-inflammatory nutrients, which act as a stressor on the hypothalamicpituitary- adrenal system and might also be transferred through the placenta. Haugen et al. and Saunders et al. [40,41] reported that there was no association between Mediterranean diet consumption (characterised by intake of vegetables, legumes, fruits and nuts, cereals, fish, red meat and poultry, dairy products, alcohol and fat) and the risk of preterm birth. The consumption of processed red meat has been associated with an increased risk of gestational diabetes in infants [42]. The SUN project's outcomes suggested that higher pre-pregnancy consumption of meat, especially red and processed meat, and haem iron intake, are significantly associated with increased gestational diabetes risk in pregnant women [43]. These outcomes were also confirmed by the study of Liang et al. [44] which indicated that higher dietary intakes of protein of animal origin in mid-pregnancy were associated with an increased risk of gestational diabetes among Chinese women. Cured meat is also recognised as the most important source of human N-nitroso compounds (NOC) exposure, due to high concentrations of nitrite that form around particles of cured meat in the stomach. NOC formed in the stomach, between nitrites and secondary or tertiary amines or amides may be a major contributor to human cancer risk. In particular, transplacental exposure of one group of NOC, the nitrosoureas, causes neurogenic tumors in infants [45].

Furthermore, the gut microbiome has an important role in infant health and immune

development and may be affected by early-life exposures. Maternal diet may influence the infant gut microbiome through vertical transfer of maternal microbes to infants during vaginal delivery and breastfeeding. The associations of red and processed meat with specific infant gut microbes showed that operational taxonomic units (OTUs) in the genus Bifidobacterium, generally recognised as a beneficial microbe, were decreased with increasing maternal fruit consumption in vaginally born infants yet increased with higher maternal red and processed meat consumption [46]. Overall, inconsistent findings have been observed in the association between maternal meat consumption and offspring health effects. The discrepancy of these findings might be due to the variety of measurement techniques, sample size and mother conditions.

3. General Conclusions

Red meat has been an important part of the human diet throughout human evolution.

When included as part of a varied diet, it provides a rich source of high biological value proteins and essential nutrients, some of which (e.g., iron) are more bioavailable than in other food sources. It is suggested that the use of red meat as a protein and iron source should be targeted at children, young women and the elderly, especially in parts of the world where anaemia and childhood stunting are highly prevalent. There is, however, increasing evidence that processed meat is associated with increased risks of CVD, cancer and dementia. Red meat has a varied association with chronic disease risk and this area needs more clarity. White meat is neutral or associated with a lower risk of chronic diseases.

Accordingly, there now seems little doubt that processed and unprocessed meat should have individual public dietary guidance linked to chronic di implementation of this will need to further public guidance on different types of meat, ideally supported by additional studies to clarify the current uncertainties.

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پوختە

گۆشتی سوور بە درێژایی پەرەسەندنی مرۆڤ بەشێکی گرنگی خۆراک بووە. بە گشتی، کاتێک وەک بەشێک لە خۆراکی تەندروست و جۆراوجۆر دەخرێتە ناوەوە، گۆشتی سوور دەتوانێت سەرچاوەیەکی دەوڵەمەند لە مادده خۆراکییە بنەڕەتییە زیندەییە بەردەستەکان و پرۆتینی بەهای بایۆلۆژی بەرز دابین بکات. ئەم توێژینەوەیە باس لە ڕۆڵ/کاریگەری خۆراکی گۆشتی سوور و پرۆسێس کراو دەکات، بە هەندێک ئاماژە بە کاریگەری ڕێژەیی گۆشتی سپی، لە کۆمەڵێک حاڵەتی درێژخایەندا لەوانە کەمخوێنی کەمی ئاسن، نەخۆشییەکانی دڵ و خوێنبەرەکان (CVD)، شێرپەنجە و خەمۆکی. هەروەها ڕۆڵی گۆشتی سوور لە پێوەندی لەگەڵ بارودۆخە فیزیۆلۆژییە سەرەکییەکانی وەک پاراستنی تەندروستی ماسولکەکانی ئێسکەپەیکەر و ئێسک و لە کاتی دووگیانیدا باس دەکرێت. هێنانە ناوەوەی گۆشتی سووری بێ چەوری لە خۆراکی تەندروست و جۆراوجۆردا ڕەنگە لەم حاڵەتە مەترسیدارانەدا سوودبەخش بێت. بەڵام بەڵگەی زیادبوون هەیە کە گۆشتی سوور و بە تایبەتی گۆشتی پرۆسێس کراو پەیوەندییان بە زیادبوونی مەترسییەکانی نەخۆشیەکانی دڵ و شێرپەنجە و نەخۆشی بیرچوونەوە هەیە لە کاتێکدا گۆشتی سپی بێلایەنە یان پەیوەندی بە مەترسی کەمترەوە هەیە. ئێستا پێدەچێت گومانی کەم هەبێت کە گۆشتی پرۆسێس کراو و پرۆسێس نەکراو دەبێ ڕێنمایی خۆراکی گشتی جیاوازیان هەبێت. هەروەها گۆشتی سوور بەشێکی گرنگی خۆراکی مرۆڤ بووە بە درێژایی پەرەسەندنی مرۆڤ. کاتێک وەک بەشێک لە خۆراکی تەندروست و جۆراوجۆر دەخرێتە ناوەوە، گۆشتی سوور سەرچاوەیەکی دەوڵەمەندی پرۆتینی بەهای بایۆلۆژی بەرز و مادده خۆراکییە گرنگەکان دابین دەکات، کە هەندێکیان زیاتر لە سەرچاوە خۆراکییە بەدیلەکاندا بەردەستن. مادده خۆراکییە تایبەتەکان لە گۆشتی سووردا وەک کەمیی لە خۆراکی هەندێک لە گروپەکانی دانیشتووانلدا دەستنیشانکراون. ئەم توێژینەوەیە باس لە ڕۆڵی گۆشتی سوور دەکات لە خۆراکی کۆرپەی گەنج، هەرزەکاران، ژنانی تەمەنی منداڵبوون و گەورەساڵانی بەتەمەن و تیشک دەخاتە سەر ئەو مادده خۆراکییە

سەرەکیانەی کە گۆشتی سوور دەتوانێت بۆ ئەم گروپانە دابین بکات. ڕۆڵی گۆشتی سوور لە پێوەندی لەگەڵ تێربوون و کۆنترۆڵکردنی کێش باس دەکرێت چونکە هێنانە ناوەوەی گۆشتی سووری بێ چەوری لە خۆراکی تەندروست و جۆراوجۆردا ڕەنگە یارمەتی دابەزاندنی کێش بدات وەک بەشێک لە خۆراکی کەمکردنەوەی وزە. هەروەها پوختەیەک لە ئامۆژگارییەکانی بەریتانیا سەبارەت بە بڕی گۆشتی سوور کە دەتوانرێت وەک بەشێک لە خۆراکی تەندروست و جۆراوجۆر بخورێت، پێشکەش کراوە.