

**ADOPTION OF IMPROVED MANAGEMENT PRACTICES AMONG
ABATTOIR WORKERS IN DUNUKOFIA LOCAL GOVERNMENT AREA
OF ANAMBRA STATE, NIGERIA**

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ABSTRACT

The study assessed the adoption level of improved management practices among abattoir workers in Dunukofia Local Government Area of Anambra State, Nigeria. Multi-stage sampling technique was used in selecting one hundred and twenty (120) respondents that were used in the study. Data were collected through primary source, using a well-structured questionnaire, and data collected were analyzed using frequency, percentage and mean score. The majority (85%) of the abattoir workers were males, 45% fell between the ages of 31 and 40 years while the majority (70%) of the workers were married. A greater proportion (57.50%) attended primary school education, while 60% had a household size of between 6 and 10 persons with a mean household size of 8 persons. The study revealed that slaughtering of animals (\bar{x} =3.67), emergency slaughter services (\bar{x} =3.67), unloading of animals (\bar{x} =3.46), identification of animals (\bar{x} =3.10), training of butchers (\bar{x} =3.08), rearing of cattle (\bar{x} =2.93) and buying and selling of cattle (\bar{x} =2.63) were the services rendered by the abattoirs in the area. The result shows that the improved management practices adopted by the abattoir workers were safety wears (\bar{x} =3.56), hand washing facilities (\bar{x} =3.25), usage of clean water supply during washing of meat (\bar{x} =2.93), improved state of lairage (\bar{x} =2.72), efficient odor management methods (\bar{x} =2.63), ante-mortem inspection (\bar{x} =2.55), and better heating system (\bar{x} =2.53). Whereas, improper storage of left over carcass (\bar{x} =3.56), improper waste management (\bar{x} =3.23), unclean environment (\bar{x} =3.22), poor

welfare of animals (\bar{x} =3.08), careless evisceration (\bar{x} =3.03), usage of tires and plastic materials in flaying animal (\bar{x} =2.93), outbreak of diseases (\bar{x} =2.88), washing of meat with unclean water (\bar{x} =2.83), poor supervisory activities (\bar{x} =2.77), usage of hormones and chemical (\bar{x} =2.77), and unclean equipment and tools (\bar{x} =2.72) were the major unhealthy and unethical management practices that affects meat quality. More so, the result revealed that unbearable taxes and revenue collection (\bar{x} =3.52), unavailability of sewage tank (\bar{x} =3.50), inadequate funds for expansion (\bar{x} =3.30), dissemination of false information about meat on the social media handle (\bar{x} =3.10), and inadequate veterinary personnel (\bar{x} =2.91), etc were the major challenges faced by the workers in the area. Based on the findings of the study, it was recommended that government should ensure enforcement of laws and regular supervision of abattoir activities in the state in other to promote safe and healthy meat for consumption.

Keywords: Adoption, Improved Management Practices, Abattoir Workers, Dunukofia

INTRODUCTION

In Nigeria, the turn of events and the development of livestock production has been on the increase, and have guaranteed a steady supply of animals meant for slaughter and processing for human consumption (Nwanta, Onunkwo, Ezenduka, Phil-Eze and Egege, 2008). The animals mostly slaughtered and processed for human consumption are cattle (beef and veel), sheep (lamb and mutton), pigs (pork), and sometimes, poultry and horses in some parts of Nigeria (Tekki, Nwankpa, Dashe, Owolodun and Elisha, 2012). These animals are mostly slaughtered and preserved in different abattoirs found in each state of the Federation. Abattoir, also known as a slaughterhouse is a place where animals are butchered for food. In the abattoir Act (1988), abattoir is depicted as any premises utilized for or regarding the butchering of animals whose meat is intended for human consumption. Hence, any facility, endorsed, registered and enlisted by any individual or group of people, for butchering and inspection of animals, handling and effective preservation of meat for human utilization, can be named an abattoir. Abattoir is originally derived from the French verb *abattre*, which means *to strike down* and it has existed as long as there have been settlements too large for individuals to rear their own stock for personal consumption (Grandin and Deesing, 2018).

However, the poor state of abattoirs, the irregular and ineffective meat inspection services and the resultant consumption of unwholesome meat by the public have become a major cause of concern to all stakeholders in the industry and the general public. Since the nations desire to achieve self-sufficiency in food production, and food safety have been thwarted because of the unwholesome practices deployed by abattoir workers in handling of meat, and thus, it is of no value if what ends up in consumer's dishes are unhealthy (Nwanta *et al*, 2008). The consumption of poor or low-quality animal products constitutes serious public health problems and these

health issues are traceable to the underdeveloped status of the livestock producers, marketers, meat processors, quality regulatory or quality control officers and consumers at different segments of the country's livestock industry (Lawan, Bello, Kwaga and Raji, 2013).

In Nigeria, waste generated by abattoirs include condemned organs, carcasses, blood, hides, horns, hoofs, hairs, paunch content and these wastes are considered to be major contaminants of meats and they are most likely the causes of meat unwholesomeness. Hence, proper abattoir operations and management should include efficient inspection of live animal (ante-mortem) and the carcass (post-mortem) by the veterinary and other quality regulating officers (Merck Veterinary Manual, 1998). The operation is crucial since the motive behind it is to detect possible animal diseases and zoonosis as well as ensuring wholesomeness of the meat slaughtered for their proposed use. In a standard abattoir, meat cuts are immediately put away and chilled to forestall the development of microorganisms and to decrease deterioration while the meat anticipates market interest for distribution. The remaining carcass might be further processed in order to remove any residual traces of meat while materials not bound for human utilization are discarded appropriately, while the meat is finally transported to local retail markets.

According to Fearon, Mensah and Boateng (2014), the main abattoir waste disposal practices in most parts of the world is dumping. Similarly, the management practice for abattoir waste disposal in Dunukofia Local Government Area in Anambra State is dumping, and such practice have been described to be aesthetically unappealing and environmentally unsustainable, and it renders the meatslaughtered, unwholesome. The numerous wastes produced by abattoir operations not only pose a significant challenge to effective environmental management but also are associated with diminished air quality in the environment, potential transferable antimicrobial resistance patterns, and several infectious agents that are pathogenic to both animals and human (Fearon, *et al*, 2014). Also, it is worthy to note that many studies have been conducted on the improper management of abattoirs but there is dearth or little information on the adoption of improved management practices among abattoir workers in Dunukofia Local Government Area of Anambra State, Nigeria. Hence, the study was designed to assess the adoption of improved management practices among abattoir workers in Dunukofia Local Government Area of Anambra State, Nigeria. Specifically, the study:

- i. described the socio-economics of the abattoir workers;
- ii. identified the services rendered by the abattoir workers in the study area;
- iii. determined the adoption level of improved management practices among the workers;
- iv. ascertained the possible unhealthy and unethical practices that affects the quality of meat; and

v. ascertained the challenges faced by the abattoir workers in the study area.

MATERIALS AND METHOD

The study was conducted in Dunukofia Local Government Area of Anambra State. The population of the study was delimited to abattoir workers (butchers) operating within the major daily markets in Dunukofia Local Government Area of Anambra State, Nigeria. Multi-stage sampling technique was used in selecting one hundred and twenty (120) respondents that were used for the study. In stage I, four communities (Ukpo, Ifitedunu, Umannachi and Umudioka) were selected purposively due to the presence of daily markets that houses major abattoirs in the selected study areas. Stage II involved a purposive selection of one abattoir in each of the daily markets in the communities selected. The daily markets includes: Nkwo market in Ifitedunu, Oye market in Ukpo, Afor-Igwe market in Umudioka and Eke market in Umannachi, all in Dunukofia Local Government Area of Anambra State. Stage III involved a random selection of forty (40) abattoir workers (butchers) from each of the daily markets selected. Thus, giving a total sample size of one hundred and twenty (120) respondents that in used for the study. A well-structured questionnaire was used in collecting the data and the data collected were analyzed using frequency count, percentage, and mean scores.

RESULTS AND DISCUSSION

Socio-economics profile of the respondents

The gender distribution of the abattoir workers as shown in Table 1, revealed that majority (85%) of the respondents are males, while 15% are females. This is an indication that men plays a leading role in abattoir business in the study area. Also, the result is evidence that certain activities and enterprises are considered gender specific and this agreement with the popular belief that certain enterprises are suited to particular gender. As such, men are considered to play significant roles in abattoir activities, as a result of the masculine nature of most abattoir activities and this aligns with the finding of Kyayesimira, Kagoro-Rugunda, Lejju, Andama, Matofari and Nalwanga (2018) who opinioned that men plays major roles in the beef value chain with few roles left for the women to handle. The study further revealed that 54 respondents accounting for 45% of the total sample size were between 31 and 40 years of age, 32.5% fell between 41 and 50 years of age, while 15% were 21 to 30 years, and the remaining 7.5% were 51 years and above, with mean age value of 34 years. The result of the analysis implies that the abattoir workers are still in their productive years, hence, greater involvement of younger individuals are expected to dominate abattoir business in the study area. Since in most tedious and rigorous situations, they are the ones that can exhibit extraordinary abilities to cope. The finding corroborates Oyediran, Omoare, Osinowo and Onabajo (2018) who reported that abattoir

workers in their area fall within working age, productive and economically active, and generally have strength to cope with the rigors associated with butchery activities.

The result on the respondent's marital status, indicated that majority (70%) of the abattoir workers are married, 17.50% are single, 10% are divorcees and 2.50% are widowed. The implication of the result is that most of the abattoir workers are married and have families. As such, majority of them dominated abattoir business in the area, in order to earn and provide food for dependents. Majority (57.50%) of the respondents had primary school education, 26.67% attended secondary school, while 15.00% do not attend any form of formal education; while 0.83% attained higher education. Therefore, the result suggests that majority of the respondents attained some level of literacy and this will result to the adoption of improved management practices among the respondents. This findings is in agreement with Palta Singh and Goyari (2018) who reported education enhances farm productivity in the case of adopters of improved technologies. Furthermore, the result in Table 1 revealed that majority (60.00%) of the abattoir workers had a household size of between 6 and 10 persons, 27.50% had household size of between 1 and 5 persons while the remaining 12.50% had 11 and above, with mean household size value of 8 persons. This shows that the abattoir workers have larger household size and this will eventually result to members of the household, serving as source of labour in carrying out the activities of the abattoir enterprise in the study area. The finding also indicates that abattoir households in the study area are characterized by large household size.

Results on years of experience shows that majority (67.50%) of the respondents had been working in the abattoir for over 6 to 10 years, 25.00% have years of experience of 11 to 15 years, 5.00% had 1 to 5 years of experience, while 2.50% of the respondents had 16 years and above. The result, therefore, implies that a greater proportion of the abattoir workers, have enough experience in the business having been engaged for over a period of time. The findings of the study is in agreement with Akporhwarho and Achoja (2014), who reported that majority of the abattoir workers in Delta State, Nigeria have been involved in the business for over a long period of time. The result of the analysis further revealed that a greater proportion (55.00%) of the abattoir workers sourced income for their business through personal savings, 20.00% sourced through family and friends, 17.50% sourced from cooperative society, while the remaining 7.50% sourced funds through commercial banks. The implication of this finding simply justifies the fact that most of the incomes needed by the abattoir workers for the abattoir business were generated through self-help efforts. Probably, the absence of financial institutions in most location where the abattoir workers are located, makes the institutions not accessible. In addition, many of the respondents could not have access to funds for their enterprise through financial institutions because of high interest rates which are normally charged by the financial institutions. According to the result of the analysis, the majority (95.00%) of the workers were

unable to have access to quality control officers, while, the remaining 5.00% of the workers do have contact with the quality control officers. The result of the analysis, simply highlights the fact that major responsibilities of the quality control officers which includes, helping to checkmate unhealthy and unethical practices among the abattoir workers, checkmating the health status of the livestock supplied and ensuring that healthy meats are distributed for public consumption are being neglected.

Table 1: Socio-economic profile of the respondents

Socio-economic Variables		Frequency (n = 80)	Percentage (%)	Mean(\bar{x})/Mode
Gender	Male	102	85.00	
	Female	18	15.00	
Age	21 – 30	18	15.00	
	31 – 40	54	45.00	
	41 – 50	39	32.50	
	51 and above	09	7.50	34 years
Marital Status	Single	21	17.50	
	Married	84	70.00	
	Divorced	12	10.00	
	Widow(er)	03	2.50	Married
Educational level	No formal education	18	15.00	
	Primary	69	57.50	
	Secondary	32	26.67	
	Tertiary	01	0.83	7.03 years
Household size	1 – 5	33	27.50	
	6 – 10	72	60.00	
	11 and above	15	12.50	8 persons

Years of experience	1 – 5	06	5.00	
	6 – 10	81	67.50	
	11 – 15	30	25.00	
	16 and above	03	2.50	11 years
Sources of income	Personal savings	66	55.00	
	Family and friends	24	20.00	
	Cooperative society	21	17.50	
	Commercial bank	09	7.50	Personal savings
Access to quality control officers	Yes	06	5.00	
	No	114	95.00	Not accessed

Source: Author's Fieldwork, 2021.

Services rendered by the abattoir workers in the study area

Entries in the Table 2 shows the distribution of the respondents according to their mean score value of the services rendered in the study area. According to the results, services rendered by the abattoir workers in the study area includes: slaughtering of animals ($\bar{x}=3.67$), emergency slaughter services ($\bar{x}=3.67$), cutting of meat ($\bar{x}=3.48$), unloading of animal on arrival ($\bar{x}=3.46$), skinning, dehairing and scaling ($\bar{x}=3.40$), deboning ($\bar{x}=3.20$), identification of animals (ear tagging) ($\bar{x}=3.10$), training of butchers ($\bar{x}=3.08$), rearing of cattle ($\bar{x}=2.93$), selling of carcass ($\bar{x}=2.90$) and buying and selling of life cattle ($\bar{x}=2.63$). However, the result further indicated that the abattoir workers in the study area do not render services of preservation and storage ($\bar{x}=2.06$), meat inspection ($\bar{x}=1.98$), cold room services ($\bar{x}=1.91$) and veterinary service ($\bar{x}=1.87$). The result implies that the abattoir workers in the area renders many but inadequate services to the people of Dukukofia Local Government Area. The result corroborates the observation made earlier, concerning inaccessibility of quality control officers, consequently, the health status of the livestock, before and after slaughter remains questionable. The result agrees with Cook, de Glanville, Thomas, Kariuki, Bronsvort and Fèvre (2017) who reported that antemortem inspection was practiced at a very low level.

Table 2: Services rendered by the abattoir workers in the study area (n=80)

Services Rendered	Mean (\bar{x}) score	Rank	Decision
Slaughtering of animals	3.67*	1 st	Rendered
Emergency slaughter services	3.67*	1 st	Rendered
Cutting of meats	3.48*	2 nd	Rendered
Unloading of animals on arrival	3.46*	3 rd	Rendered
Skinning, dehairing and scaling	3.40*	4 th	Rendered
Deboning	3.20*	5 th	Rendered
Identification of animals	3.10*	6 th	Rendered
Training of butchers	3.08*	7 th	Rendered
Rearing of cattle	2.93*	8 th	Rendered
Selling of carcass	2.90*	9 th	Rendered
Buying and selling of life cattle	2.63*	11 th	Rendered
Preservation and storage services	2.06	12 th	Not rendered
Meat inspection	1.98	13 th	Not rendered
Cold room services	1.91	14 th	Not rendered
Veterinary services	1.87	15 th	Not rendered

Source: Author's Fieldwork, 2021. * = Services rendered by the abattoir workers

Adoption Level of the Improved Management Practices among Abattoir Workers

The result (Table 3) of the analysis on adoption level of improved management practices among the abattoir workers indicated that the improved management practices with an average mean score of 2.5 and above were: safety wears (\bar{x} =3.56), hand washing facility (\bar{x} =3.25), clean and adequate water supply (\bar{x} =2.93), improved state of lairage (\bar{x} =2.72), an efficient odor management method (\bar{x} =2.63), ante-mortem inspection (\bar{x} =2.55), controlled incineration (\bar{x} =2.53) and better heating system (non-use of tires)(\bar{x} =2.53). The result is in agreement with the findings of Gadisa, Yusuf, and Kurtu (2019) whose survey result and personal observations indicated that in all the abattoirs in the study area, there were no veterinary laboratory, refrigerator, chilling room, hot water service and hazard analytical critical control point (HACCP). The result of the study further revealed that improved management practices such as the meat processing plant, waste management system, functional cold-room, veterinary presence for identification of sick animals, modern laboratory for quality control services, and post-mortem inspection with mean score values of 2.43, 2.31, 2.18, 1.80, 1.80 and 1.77, respectively were not adopted by the workers. The finding is in corroborates Adebowale (2019), who observed and reported that amenities such as cooling room, changing rooms and animal waste management system were lacking.

Table 3: Adoption level of improved management practices among abattoir workers

Improved Management Practices	Mean (\bar{x}) score	Rank	Decision
Safety wears	3.56*	1 st	Adopted
A hand washing facility	3.25*	2 nd	Adopted
Usage of clean water supply during washing of meat	2.93*	3 rd	Adopted
Improved state of lairage	2.72*	4 th	Adopted
An efficient odor management method	2.63*	5 th	Adopted
Ante-mortem inspection	2.55*	6 th	Adopted
Controlled incineration	2.53*	7 th	Adopted
Better heating system (nonuse of tires)	2.53*	7 th	Adopted
Meat processing plant	2.43	8 th	Not Adopted
Modern waste management system	2.31	9 th	Not Adopted
Functional cold room	2.18	10 th	Not Adopted
Veterinary presence for identification of sick animals	1.80	11 th	Not Adopted
Use of modern laboratory for quality control services	1.80	11 th	Not Adopted
Post-mortem inspection	1.77	12 th	Not Adopted

Source: Author’s Fieldwork, 2021. Note: * = adopted, cut off point = 2.5

Perceived Unhealthy and Unethical Management Practices that Affect Quality of Meat

The result of the analysis on perceived unhealthy and unethical management practices that affects meat quality in the area is shown in Table 4. The result revealed that improper storage of left over carcass (\bar{x} =3.56; 1st), improper waste management and disposal practices (\bar{x} =3.23; 2nd), unclean environment (e.g. use of unclean slab) (\bar{x} =3.22; 3rd), poor welfare of animals (\bar{x} =3.08; 4th), careless evisceration (\bar{x} =3.03; 5th), usage of tires and plastic materials in flaying animal skin (\bar{x} =2.93; 6th), use of unclean protective clothes by abattoir workers (\bar{x} =2.90; 7th), outbreak of diseases (\bar{x} =2.88; 8th), washing of meat with unclean water (\bar{x} =2.83; 9th), poor supervisory activities (\bar{x} =2.77; 10th), usage of hormones and chemical (\bar{x} =2.77; 10th), and unclean equipment and tools (\bar{x} =2.72; 11th), were the perceived unhealthy and unethical management practices that affects meat quality in the study area, except poor meat inspection practices (\bar{x} =2.18; 12th), slaughtering of unhealthy animals for sales (\bar{x} =1.93; 13th), and grazing of animals at odd times (\bar{x} =1.88; 14th) as indicated in the result of the study. Considering the significant roles of meat in the human diet throughout history (Smil, 2013), and its current role as a key ingredient in the main meal for many cultures around the world (Seleshe, Jo, and Lee, 2014), there is need to pay reasonable attention to factors that contaminates it.

Unfortunately, the result of the analysis revealed that there were countless unhealthy and unethical management practices exhibited among the abattoir workers in the study area that affect the quality of meat being processed for sales. The implication of these unhealthy and unethical practices will certainly result to increased occupational exposure to diseases and meat contamination. According to Scanlan (2016), meat (whether processed and unprocessed) for human consumption should be made from healthy animals, since animals that have physical, infectious, or toxic agents may be hazardous to human health. The finding confirms and agrees with a study conducted by Bersisa, Tulu, and Negera (2019) who observed that meat contamination in abattoirs and retail meat outlets result from the use of contaminated water, unhygienic practices such as poor handling, wearing of contaminated protective cloths, incorrect processing and marketing practices. Similarly, Adetunde, Glover, Oliver and Samuel (2011), confirmed and reported that slaughter workers unclean hands, clothing, and equipment used in carcass dressing accounted for the microbial contamination. In addition, Abiayi, Inabo, Jatau, Makinde, Sar, Ugbe, *et al* (2015) observed that animals are being slaughtered on unclean open slabs, and this is usually carried out by butchers who use little or no protective wears in abattoirs with poor drainage systems, water supply and waste disposal system.

Table 4: Unhealthy and unethical management practices that affects meat quality

Unhealthy and Unethical Management Practices	Mean (\bar{X}) score	Rank
Improper storage of left over carcass	3.56*	1 st
Improper waste management and disposal practices	3.23*	2 nd
Unclean environment (slaughter slab)	3.22*	3 rd
Poor welfare of animals	3.08*	4 th
Careless evisceration	3.03*	5 th
Usage of tires and plastic materials in flaying animal skin	2.93*	6 th
Use of unclean protective clothes by workers	2.90*	7 th
Outbreak of diseases	2.88*	8 th
Washing of meat with unclean water	2.83*	9 th
Poor supervisory activities	2.77*	10 th
Usage of hormones and chemical	2.77*	10 th
Unclean equipment and tools	2.72*	11 th
Poor meat inspection practices	2.18	12 th
Slaughtering of unhealthy animals for sales	1.93	13 th
Grazing of animals at odd times	1.88	14 th

Source: Author's Fieldwork, 2021; * = Factors that affect meat quality

Challenges Faced by the Abattoir Workers in the Study Area

The result of the analysis on challenges faced by the abattoir workers in the study area is shown in Table 5. The result revealed that unbearable taxes and revenue collection (\bar{x} =3.52), unavailability of sewage (\bar{x} =3.50), inadequate water supply (\bar{x} =3.43), inadequate funds for expansion (\bar{x} =3.30), dissemination of false information about meat on social media (\bar{x} =3.10), poor road network within the axis of the abattoir (\bar{x} =3.03), unavailability of veterinary personnel (\bar{x} =2.91), unavailability of storage facilities (cold-rooms) (\bar{x} =2.88) and wrong choice of location of the abattoir (\bar{x} =2.56) were the major challenges faced by the abattoir workers in the study area. The results of the study further revealed that factors such as epileptic power supply (\bar{x} =2.35), sub-standard nature of the abattoir (\bar{x} =2.32), complicated land disputes in the choice of location (\bar{x} =2.17), and poor security (\bar{x} =1.91) were not indicated as the major challenges facing the abattoir workers in the area. Considering the outcome of the result of the analysis on the challenges faced by the abattoir workers in the area, it is pertinent to not that the abattoir workers were mainly faced with the problems of basic amenities, and poor infrastructures. The result of the study confirms the study carried out by Akporhwarho *et al.*, (2014), who reported that abattoir workers are faced with numerous challenges, ranging from inadequate finance, poor infrastructure and basic amenities, poor sanitation, inadequate number of abattoirs, and lack of government support, etc.

Table 5: Challenges faced by the abattoir workers in the study area

Challenges	Mean (\bar{x}) score	Rank
Unbearable taxes and revenue collections	3.52*	1 st
Unavailability of sewage tank	3.50*	2 nd
Inadequate water supply	3.43*	3 rd
Inadequate funds for expansion	3.30*	4 th
Dissemination of false information about meat on social media	3.10*	5 th
Poor road network within the axis of the abattoir location	3.03*	6 th
Unavailability of veterinary personnel	2.91*	7 th
Unavailability of storage facilities such as cold-rooms	2.88*	8 th
Wrong choice of location of the abattoir	2.56*	9 th
Epileptic power supply	2.35	11 th
Sub-standard nature of the abattoir	2.32	12 th
Complicated land disputes in the choice of location	2.17	13 th
Poor security	1.91	14 th

Source: Author’s Fieldwork, 2021.* = Major challenges that affect the abattoir workers

CONCLUSION AND RECOMMENDATION

The abattoir business remains a source of livelihood engaged by many who find interest in it. The services rendered by the abattoir workers in the study area includes but not limited to slaughtering of animals, cutting of meats, unloading of animals, deboning, training of butchers, and buying and selling of cattle. The business enterprise was dominated by the male butchers, while the majority of abattoir workers were married, educated and experienced in the enterprise. The abattoir workers recorded high level of adoption of the improved management practices but, however, were faced with numerous challenges, ranging from unbearable taxes and revenue collection, unavailability of sewage tank, inadequate funds for expansion, dissemination of false information about meat on social media, and inadequate veterinary personnel. To lift the face of the enterprise in the area, the government should ensure the enforcement of laws and regular supervision of abattoir activities in the state in other to promote safe management practices among the abattoir workers and as well, promote safe and healthy meat for human consumption.

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